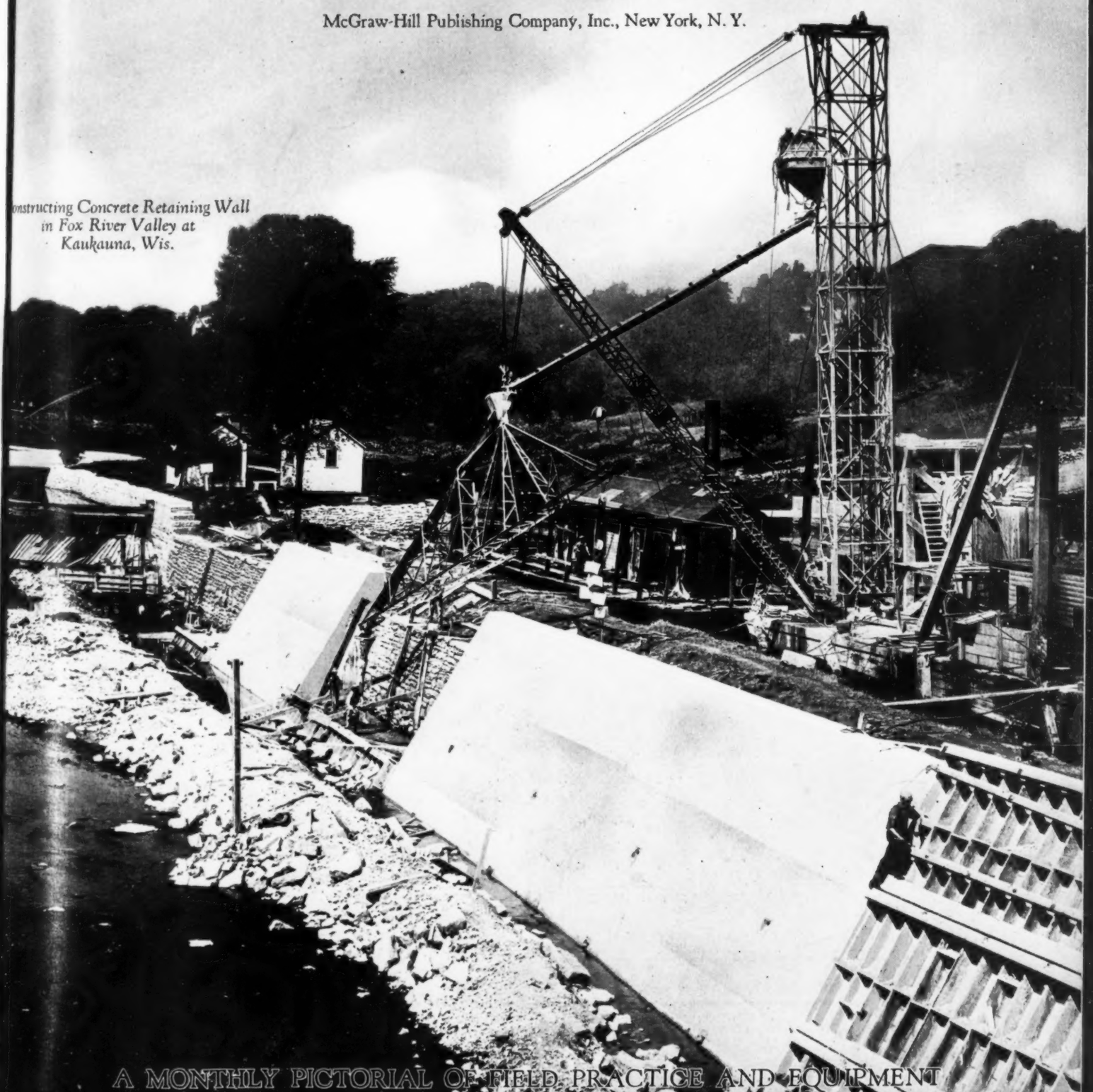
November
1927

Construction Methods

McGraw-Hill Publishing Company, Inc., New York, N. Y.



onstructing Concrete Retaining Wall in Fox River Valley at Kaukauna, Wis.

A MONTHLY PICTORIAL OF FIELD PRACTICE AND EQUIPMENT

S. Ashland Avenue, Lexington, Ky., paved with TEXACO Sheet Asphalt in 1910.

After 17 years

It is such durability which is sought after by engineer, contractor and taxpayer alike. We might have gone east to Newark, N. J., west to Topeka, Kansas, south to New Orleans, La., or to leading cities in other sections of the country for a TEXACO Asphalt Pavement which has successfully completed 17 years' service.

But here is one in Lexington, Ky. Since 1910, this pavement has successfully served Lexington's traffic and withstood its temperature changes. In 1927 it is still as smooth and easy-riding as ever.

Lexington, Ky., is one more of the 1350 U. S. cities which have pavements of TEXACO Asphalt.

Don't miss the
ROAD BUILDERS' CONVENTION
***and* ROAD SHOW**

Cleveland, O., Jan. 9th-13th, 1928

The latest developments in road construction, maintenance and operation will be discussed.

The most modern types of road machinery and materials will be on exhibit.

TEXACO

The Texas Company
ASPHALT SALES DEPT.
17 Battery Place, New York City

New York
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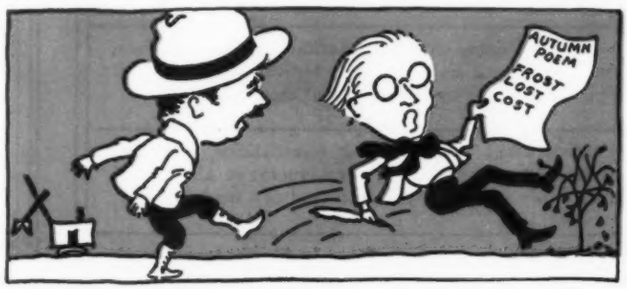
Construction
Methods

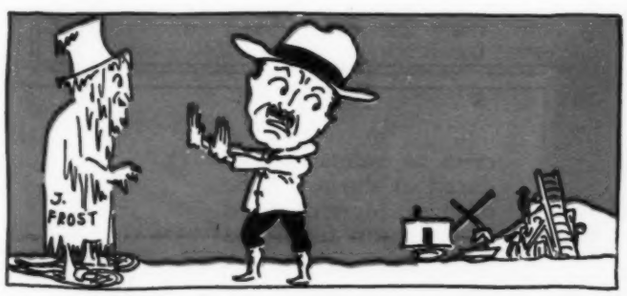
Hitting the High Spots

AUTUMN with its crisp, cool air and brilliant foliage has long been a favorite season with poets who have celebrated its beauties in song and story. But try out a good Autumn poem on a construction man who is trying to clean up a contract before the snow flies and see what happens.



A construction job in October or November is no place for a poet to visit in quest of material for an Autumn poem.

IN more than half of the United States, this is a time of feverish activity in the construction business. Everybody is hustling all day long, the boss scans the thermometer with apprehensive eye, and work often goes on far into the night in an effort to finish up before it gets too cold to go on. Let's hope that you have your job licked and will be through before the first heavy frost. And if

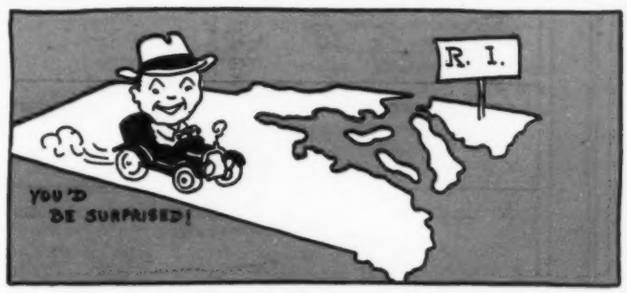


you are still on the anxious seat, don't forget that Construction Methods is rooting for a late winter, and good weather every day until Christmas.

BUT the real object of this page is to tell you something about the contents of this issue; to give you a chance to find out whether or not we are keeping our promise to give you each month a pictorial cross-section of the construction industry.

UP near the front is a Rhode Island road job, pages 6, 7 and 8. Rhode Island is such a small state that its splendid highways do not always get the attention they deserve. The real experts in the road building business always have a good word for Rhode Island.

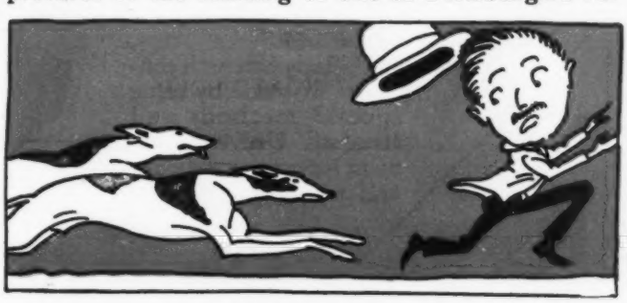
THEN we have a description of the great bridge across Lake Pontchartrain near New Orleans, one of the most interesting bridge jobs now under way in this country. Turn to pages 20-24 and see



the perfect alignment of the concrete piles and the methods used in driving them.

FOR the man who is interested in building construction there are a couple of jobs, the Columbus, Ohio, City Hall, pages 26 and 27, and a new school in Stamford, Conn., pages 38 and 39.

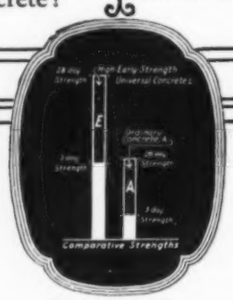
THE Blue Book, pages 9-12, shows some of the work that St. Louis is doing to improve its water supply, and there are some interesting pictures of the relining of one of Pittsburgh's res-



ervoirs on pages 32-36. There is a sewer job in Tulsa on pages 16 and 17, and if by any chance anybody wants you to build a track for dog racing, turn to pages 30 and 31 and see how a Texas contractor kept a couple of jumps ahead of the greyhounds.

. . . answering your Questions regarding High-Early-Strength Concrete

QUESTION	ANSWER
1—What is *High-Early-Strength* Universal Concrete?	Concrete with a *3-day* strength equal to the *28-day* strength of ordinary concrete.
2—Are special materials and equipment needed?	No. It is made with the *usual* materials, *usual* labor, *usual* equipment and standard Universal cement, all applied according to thoroly tested methods.
3—What is its chief advantage?	Saves time! Concrete for foundations, buildings, sidewalks, pavements and improvements of all kinds is made ready for use in *3 days* instead of *3 weeks*.
4—Is there any additional important advantage?	Yes. Such concrete not only has a higher *early* strength, but also a greater *ultimate* strength and therefore is *permanently* better and stronger than ordinary concrete. (See diagram.)
5—Is its use restricted to certain kinds of jobs?	No. Because it may be made as workable as desired, *High-Early-Strength* Universal Concrete is used for any and all kinds of concrete work.
6—Has *High-Early-Strength* Universal Concrete been fully tested?	Yes. Thousands of laboratory tests, years of experiment and hundreds of actual jobs prove the value of *High-Early-Strength* Universal Concrete.
7—What other advantages does *High-Early-Strength* Universal Concrete offer?	It is unnecessary to stock extra brand of material as *High-Early-Strength* concrete is obtained with the *usual* materials, *usual* labor, *usual* equipment and the same quality Universal cement as used for ordinary construction.
8—Where can I get detailed information on *High-Early-Strength* Universal Concrete?	Full details for use on any concrete work will be sent promptly on receipt of the coupon below.



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High-Early-Strength concrete "E" made by using special methods and standard Universal cement is *permanently* better and stronger than concrete as ordinarily produced as shown in the diagram. More detailed information furnished promptly on request. Just use the coupon.

Name .....

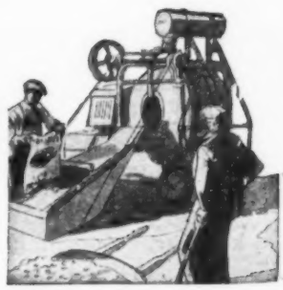
Address .....

UNIVERSAL PORTLAND CEMENT CO.
210 South La Salle Street, Chicago
Without obligation, please send me detailed information on methods of securing strong concrete in 3 days with the usual materials and equipment.
SM 11-27

Universal Portland Cement Co.

Chicago Pittsburgh Minneapolis Duluth Cleveland Columbus New York

Concrete for Permanence



Construction Methods

McGraw-Hill
Publishing Company, Inc.
JAMES H. MCGRAW, *President*
E. J. MEHREN, *Vice-President*

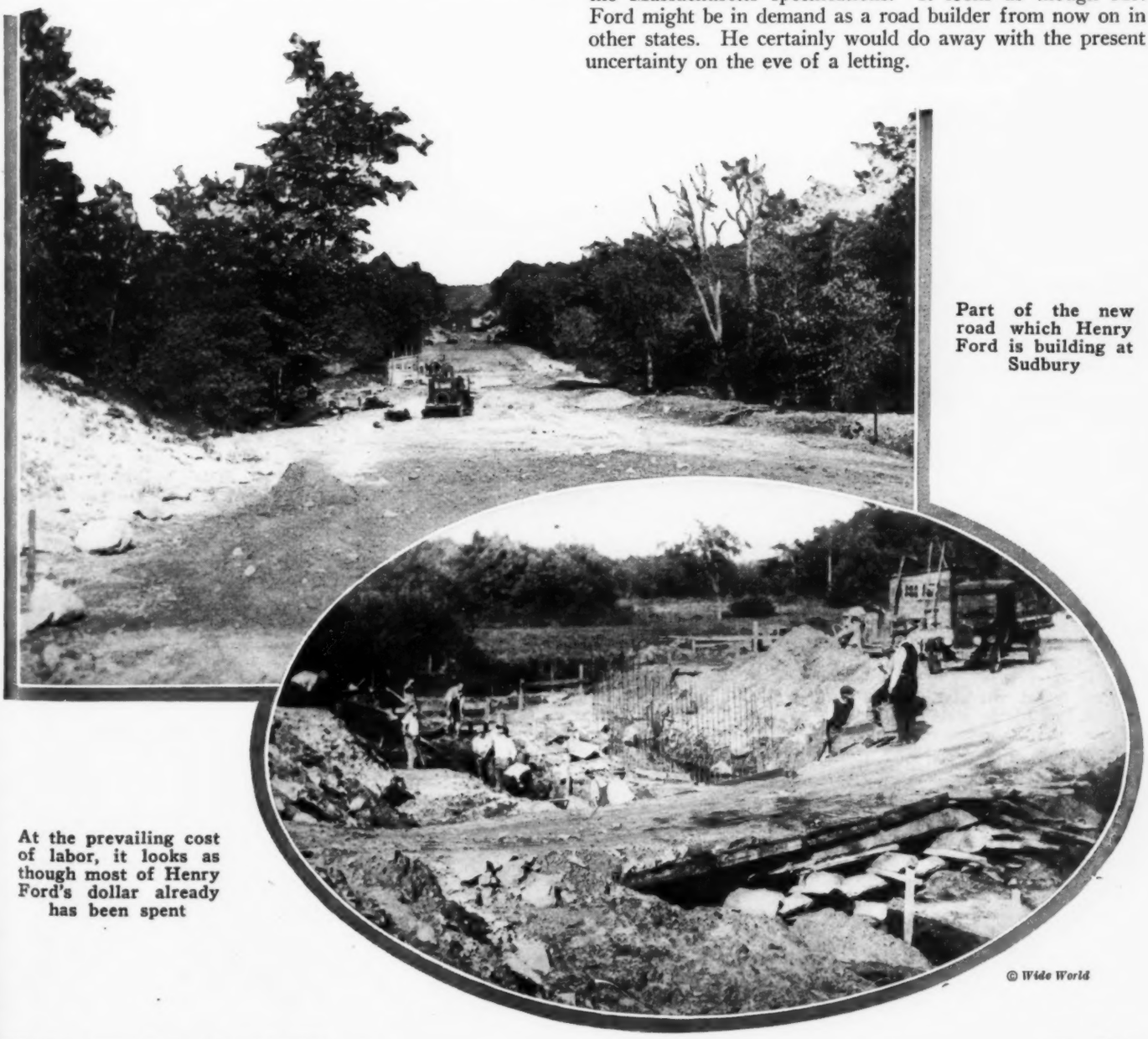
A Monthly Pictorial of Field Practice and Equipment Illustrating Successful Construction, Maintenance and Material-Handling Methods for General Construction, Highways, Buildings, Industrial Plants and Public Works and Utilities

WILLIAM JABINE, *Editor*

VOLUME 9 — NEW YORK, NOVEMBER, 1927 — NUMBER 11

The Dollar Highway

STATE highway officials who have been trying to stretch insufficient appropriations for many years are envious just now of the State of Massachusetts which has let a contract for the construction of a new highway 1½ miles long at a contract price of $1.00. Work already has begun on the new road which is being built by Henry Ford in order to take traffic away from the doorstep of the Wayside Inn at Sudbury. Despite the contract price, the new road will meet the Massachusetts specifications. It looks as though Mr. Ford might be in demand as a road builder from now on in other states. He certainly would do away with the present uncertainty on the eve of a letting.



Part of the new road which Henry Ford is building at Sudbury

At the prevailing cost of labor, it looks as though most of Henry Ford's dollar already has been spent

© *Wide World*

With the Men

At left—At work on a hydro-electric development in Ireland which utilizes the waters of the River Shannon

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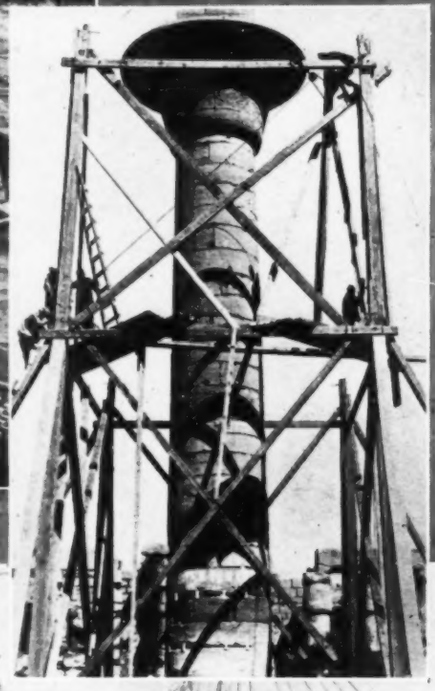

Construction men were called in to take down one of the great Egyptian columns at Karnak which will be re-erected with a concrete foundation

©P & A

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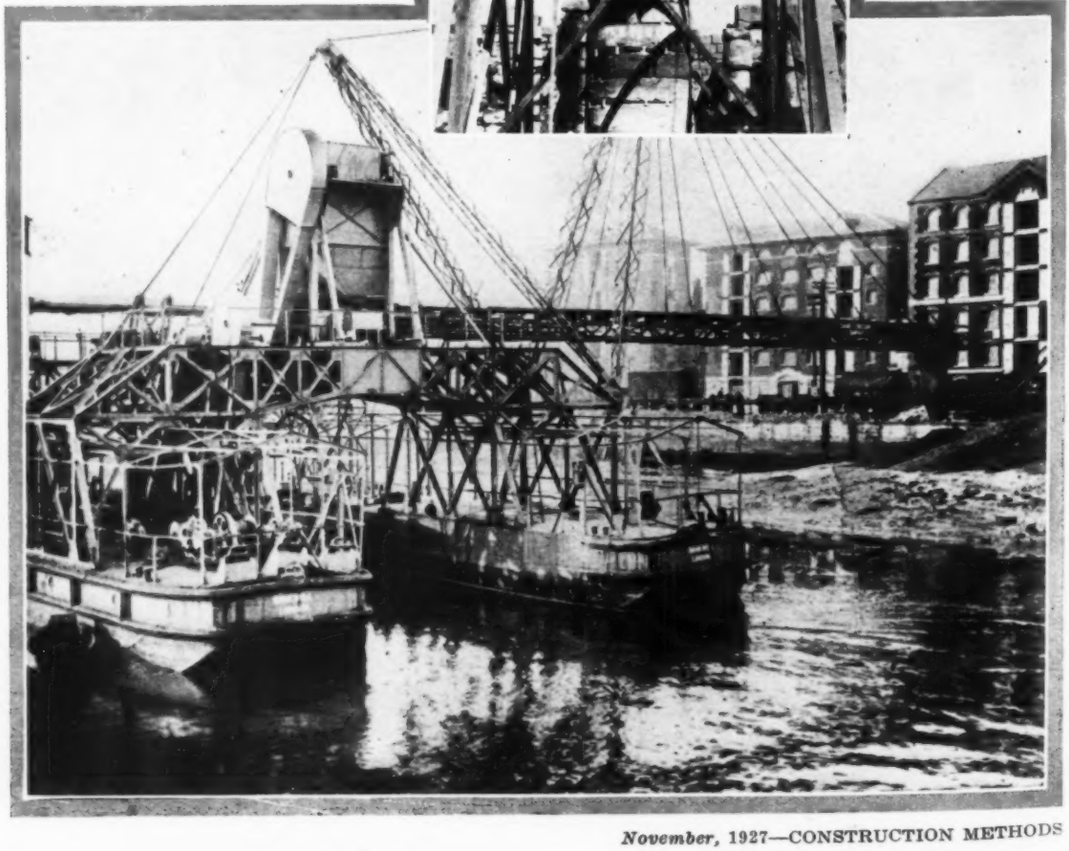
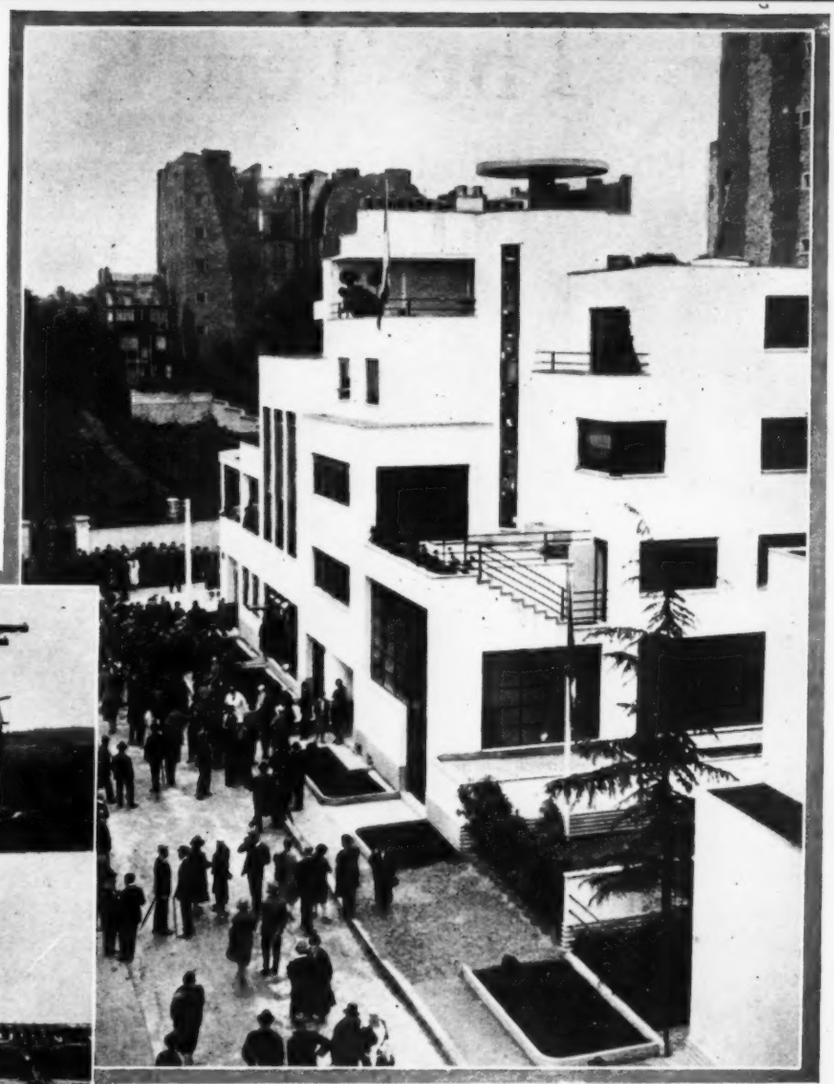


An elaborate bank-making machine is in use at Southampton, England, where the docking facilities of the port are being greatly extended. The excavated material is carried by a conveyor system and deposited on the bank of the stream

in the Field



At right—A new apartment building in Paris, the design of which embodies some unusual features

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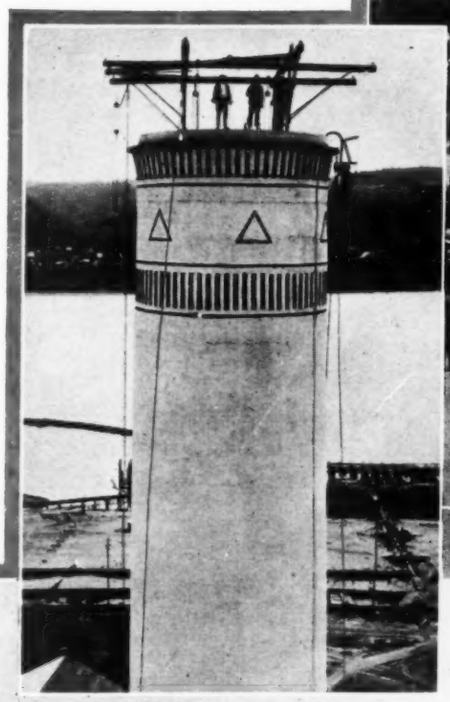

A concrete stack 300 ft. high, 30 ft. wide at the base and 21 ft. across the top was recently completed at the Long Bell Sawmill in the state of Washington

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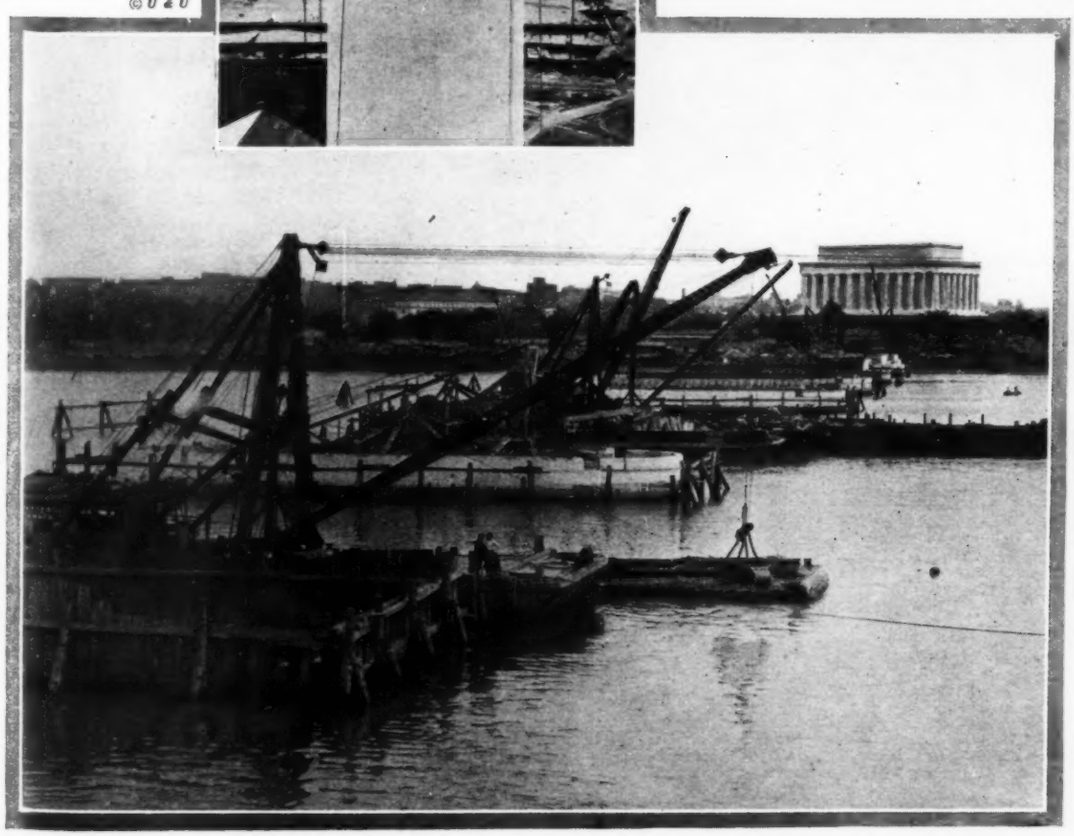


Steady progress is being made in the construction of the new Memorial Bridge across the Potomac at Washington. This great structure starts near the Lincoln Memorial and crosses the river to Arlington

The Ten Rod Road

Rhode Island Completes Section of Victory Highway

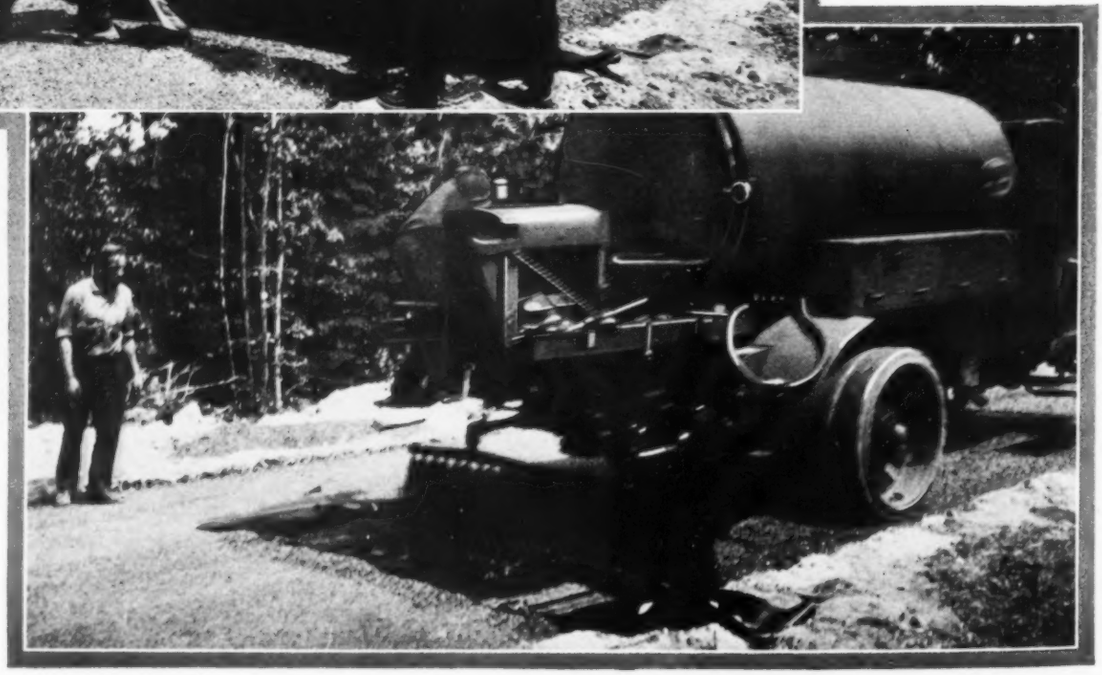
A road builder by inheritance—Harry E. Brown, superintendent for the Lane Construction Company, whose father and grandfather both built roads

UNDER the direction of George H. Henderson, Chief Engineer of the State Board of Public Roads, an important change in the highway system of Rhode Island is being worked out. Practically all of the main routes radiate like spokes of a wheel from the cities of Providence and Newport. The result is that traffic passing through the state is carried into either Providence or Newport, even though these cities may not be on the shortest route.

In order to improve this condition of affairs, roads are now being built in various parts of the state which, when tied up and completed, will make a circle known as the Victory Highway surrounding Providence and Newport at a distance of about 25 miles, and crossing all of the existing main roads.

One section of the Victory Highway system known as the Ten Rod Road has just been completed by the Lane Construction Company of Meriden, Conn. It begins at the main

At the point where the distributor begins to discharge tar in putting on the seal coat, a strip of tar paper was laid across the road to prevent unevenness



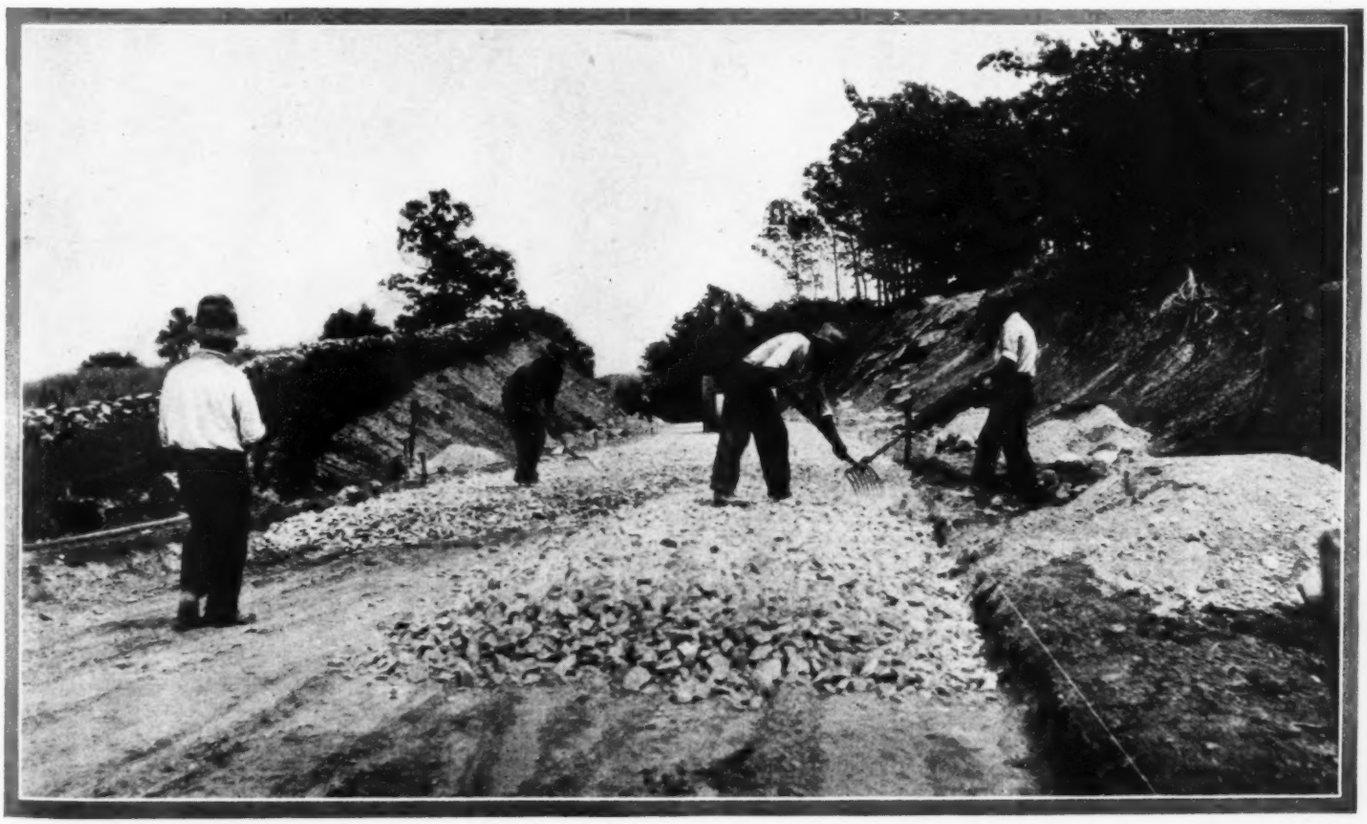
The Etnyre distributor begins to discharge its load of hot tar just as it crosses the strip of tar paper

Cutting through this ledge was a hard job. About 7,500 cu.yd. of rock were removed at this point

road from Westerly to Providence and extends about 5 miles southeast. It is a penetration macadam job, and much of it is on new location, through rather wild country. This made considerable excavation necessary, including a cut through an extremely heavy ledge of rock. Work began in September, 1926, and much of the grading and excavation was done during the winter months. The total excavation was about 13,000 yd., and the heavy work was handled by two Erie shovels.

The superintendent in charge of the job is Harry E.

Laying the base course. A rope is attached to the fork and two men operate it



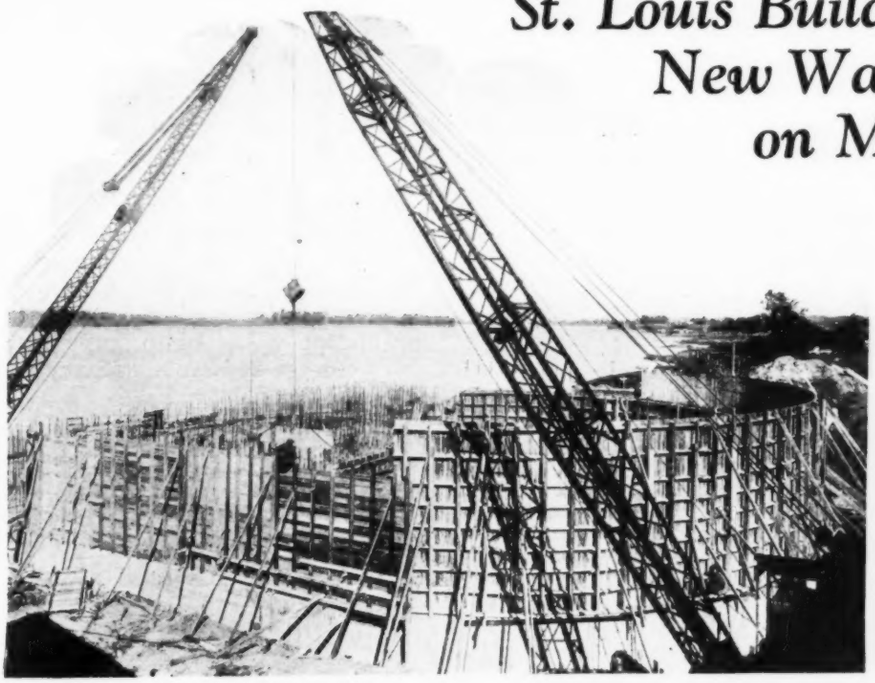
Work on the Ten Rod Road was carried on through the winter

Brown who has been mixed up in roadbuilding ever since he was old enough to walk, as his father built roads in northern Massachusetts, and his grandfather constructed highways in Canada. The new pavement consists of a 5½-in. stone base with a 2½-in. top of finer material. It is 18 ft. wide with 5-ft. shoulders.

One of the heavy cuts. This photograph shows the finished surface of the road

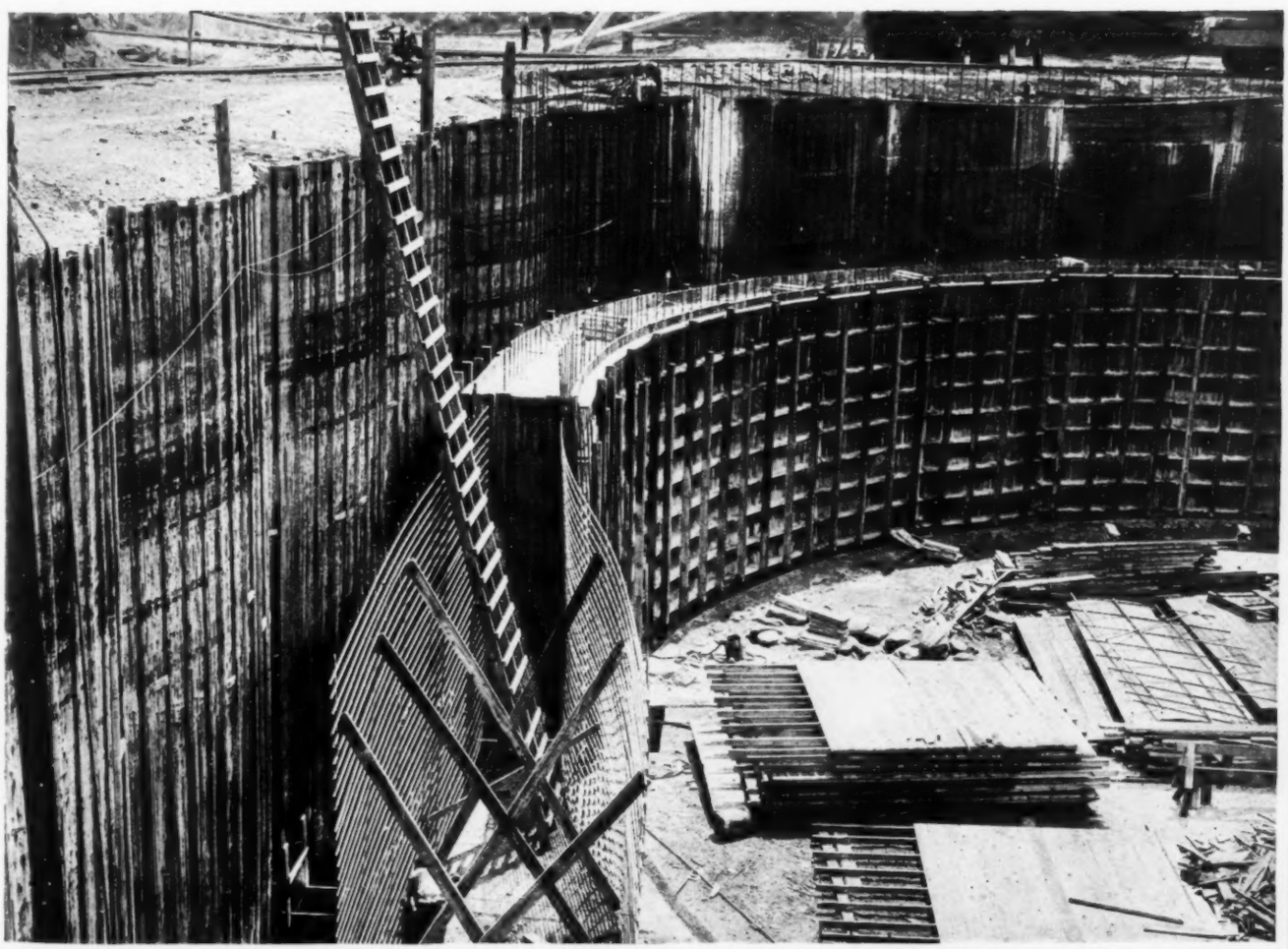
BLUE BOOK

St. Louis Builds New Waterworks on Missouri River



At right—Setting up forms for concrete walls of intake and low service pump pit at the new plant. The walls are 44.5 ft. high and were poured in three lifts

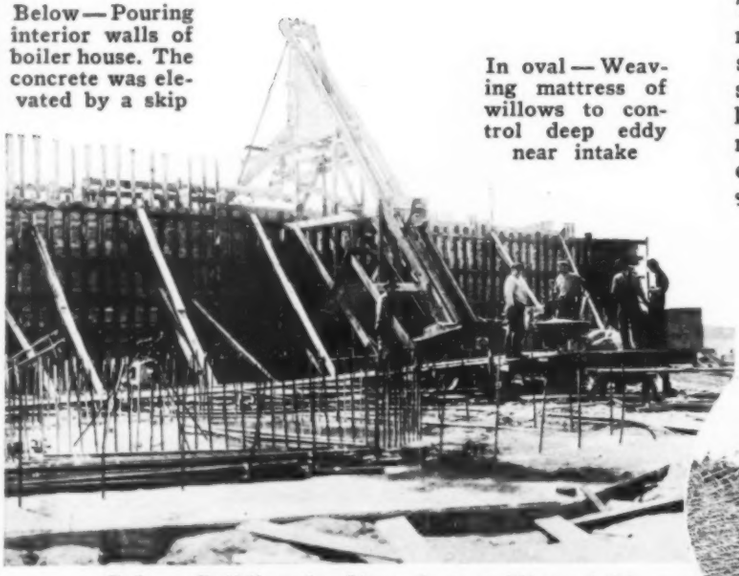
Below—The intake and low service pump pit were constructed inside a cellular cofferdam made of sheet steel piling. Heavy reinforcing was used in building the wall



Methods of Construction on New St. Louis Waterworks

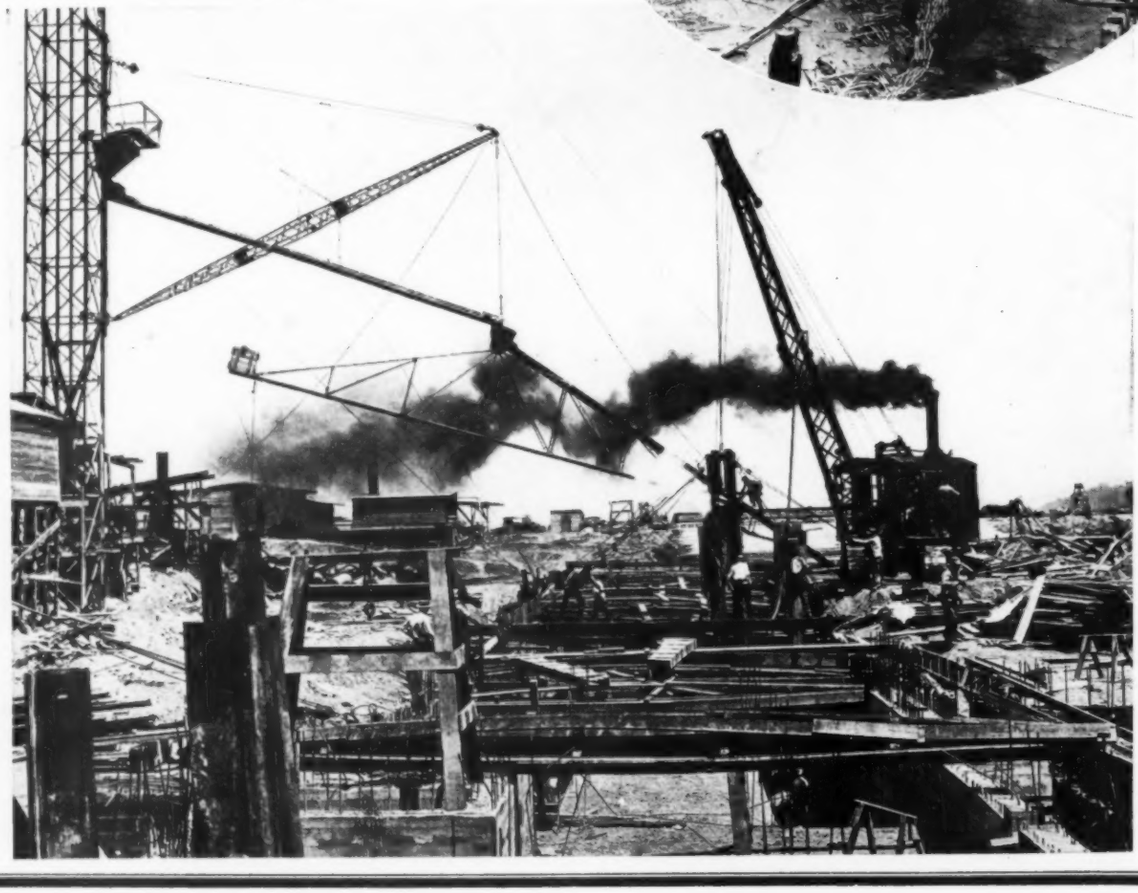
THE city of St. Louis is building a new waterworks on the Missouri River about nine miles above St. Charles, Mo. The major items of the project consist of river control, construction of high and low service pump pits and intake with a superstructure over them, boiler and coal receiving houses, smoke stack, coagulant house, sedimentation and coagulation basins, filter plant, clear water basin, pipe line to city and a storage reservoir at Stacy Park.

Below — Pouring interior walls of boiler house. The concrete was elevated by a skip



In oval — Weaving mattress of willows to control deep eddy near intake

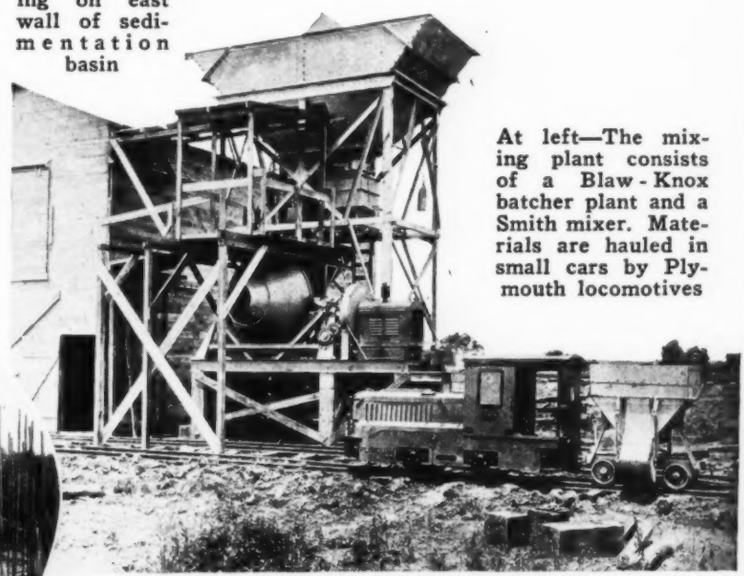
Below—Building the filter plant at Missouri River development



Hauling Concrete From the Central Mixing Plant

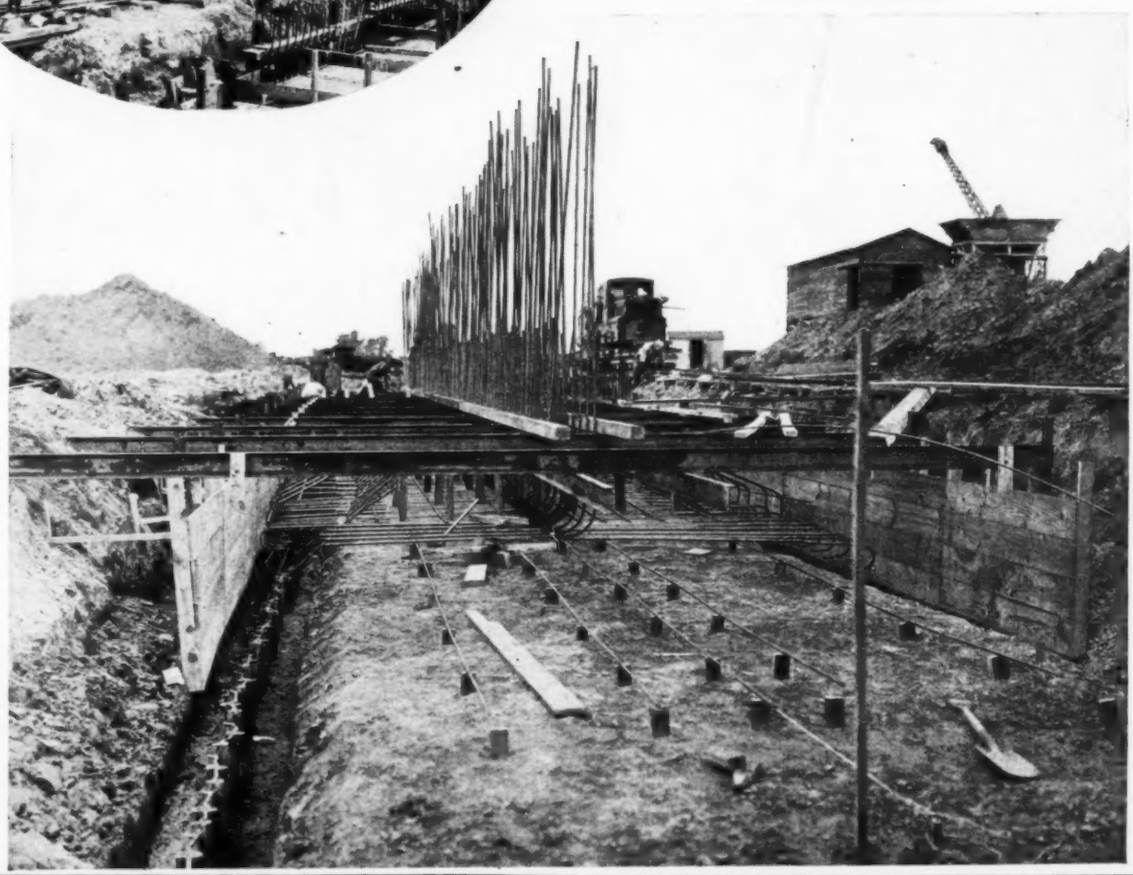
THE contractors for the new waterworks are: river control, Kansas City Bridge Company, Kansas City, Mo.; intake, pump pits, Stacy Park reservoir, Frazier-Davis Construction Co., St. Louis; pipe line, Bill Hayes Construction Company, Detroit; concrete work in filter plant, McCormack-Combs Construction Company, St. Louis; superstructures of high and low service buildings, Dunham Construction Company, St. Louis; sedimentation basins, Missouri Engineering & Contracting Company, St. Louis.

In oval—Pouring footing on east wall of sedimentation basin



At left—The mixing plant consists of a Blaw-Knox batcher plant and a Smith mixer. Materials are hauled in small cars by Plymouth locomotives

Below—Steel fabrication on the east footing of sedimentation basins



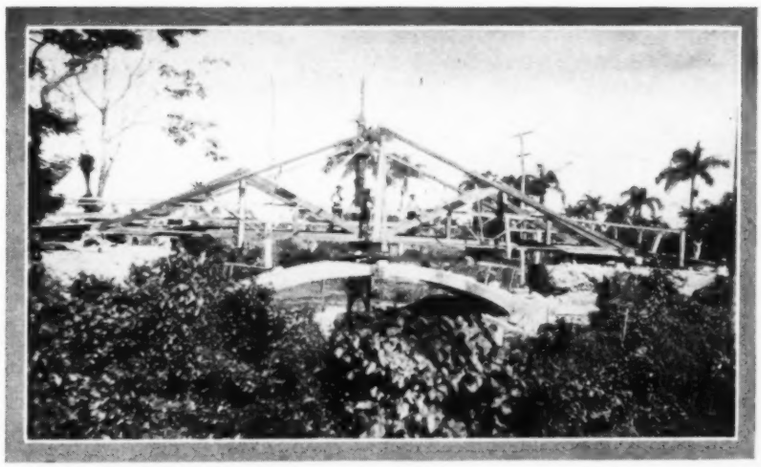
Laying Pipe Line From Plant to City

The pipe line is 16 miles in length and consists of 62-in. steel pipe. This line will deliver water to the Stacy Park Reservoir which is about half way between the river plant and the city, and also will carry water from the reservoir to the city

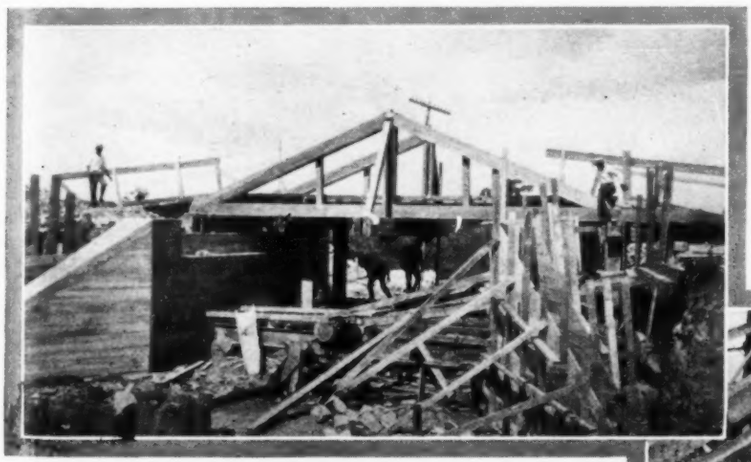
The way in which part of the job was handled is shown in these two photographs. In the upper one, a crane is digging a trench operating as a dragline, and below two cranes are joining forces in handling a section of the big steel pipe

Temporary Bridges on Cuban Highway

J. E. Salazar
Civil Engineer
Marianao, Cuba

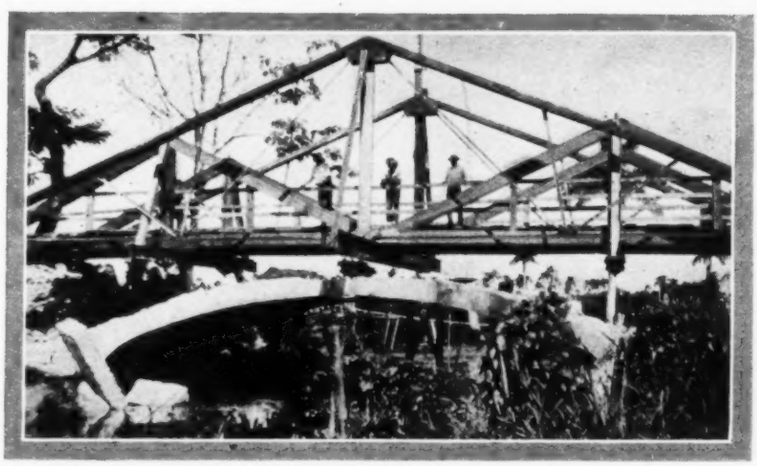


Wins First Prize of $25.00



Three of the prize-winning photographs on this page show a temporary bridge constructed on the Central Highway in Cuba by Joseph E. Salazar who has a sub-contract for certain of the new structures along this highway which is being built by Warren Brothers Company of Boston

On the bridge shown, two timber trusses, each with a span of 34 ft., were used in combination with two steel trusses. These 34-ft. trusses were of a standard type used by Mr. Salazar on smaller bridges, and the photograph just above shows two of them in use on a short span bridge. The steel trusses were placed 4 ft. beyond the ends of the wood trusses and carried two 15-in. channels back to back with a heavy timber bolted in between to support the ends of the wood trusses



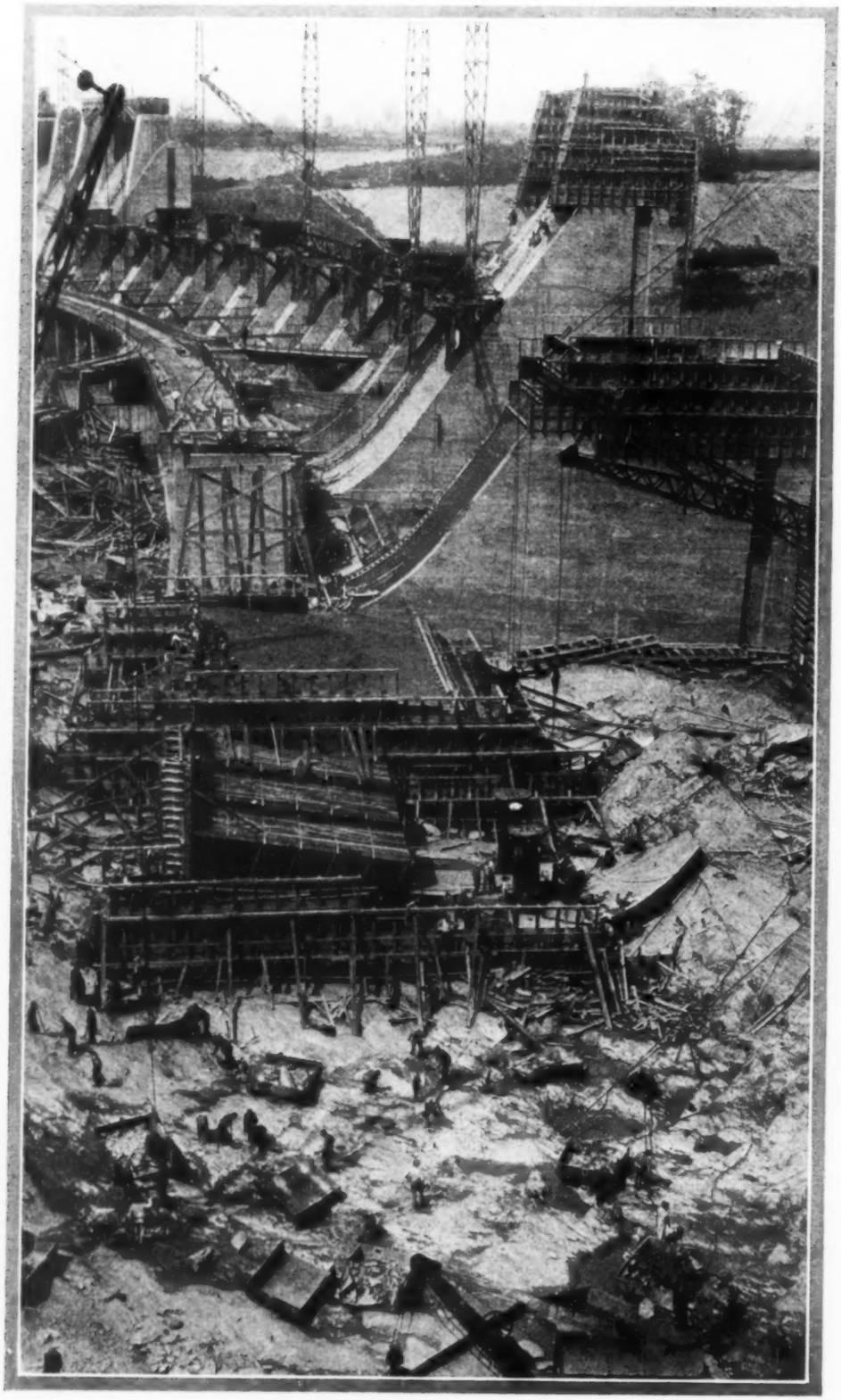
The temporary bridge was built directly over the old masonry structure which was torn down

A clear span of 68 ft. left plenty of room for the new 37-ft. concrete bridge

Hydro-Electric Development in Alabama

H. A. Sargent
Assistant Engineer
Dixie Construction Company
Wetumpka, Ala.

Wins
Second Prize
of
$15.00



This photograph, which wins second prize, gives an excellent general view of the construction of the Lock 18 development on the Coosa River for the Alabama Power & Light Company. The Dixie Construction Company is handling the job which includes the placing of 470,000 cu.yd. of concrete and 440,000 cu.yd. of excavation

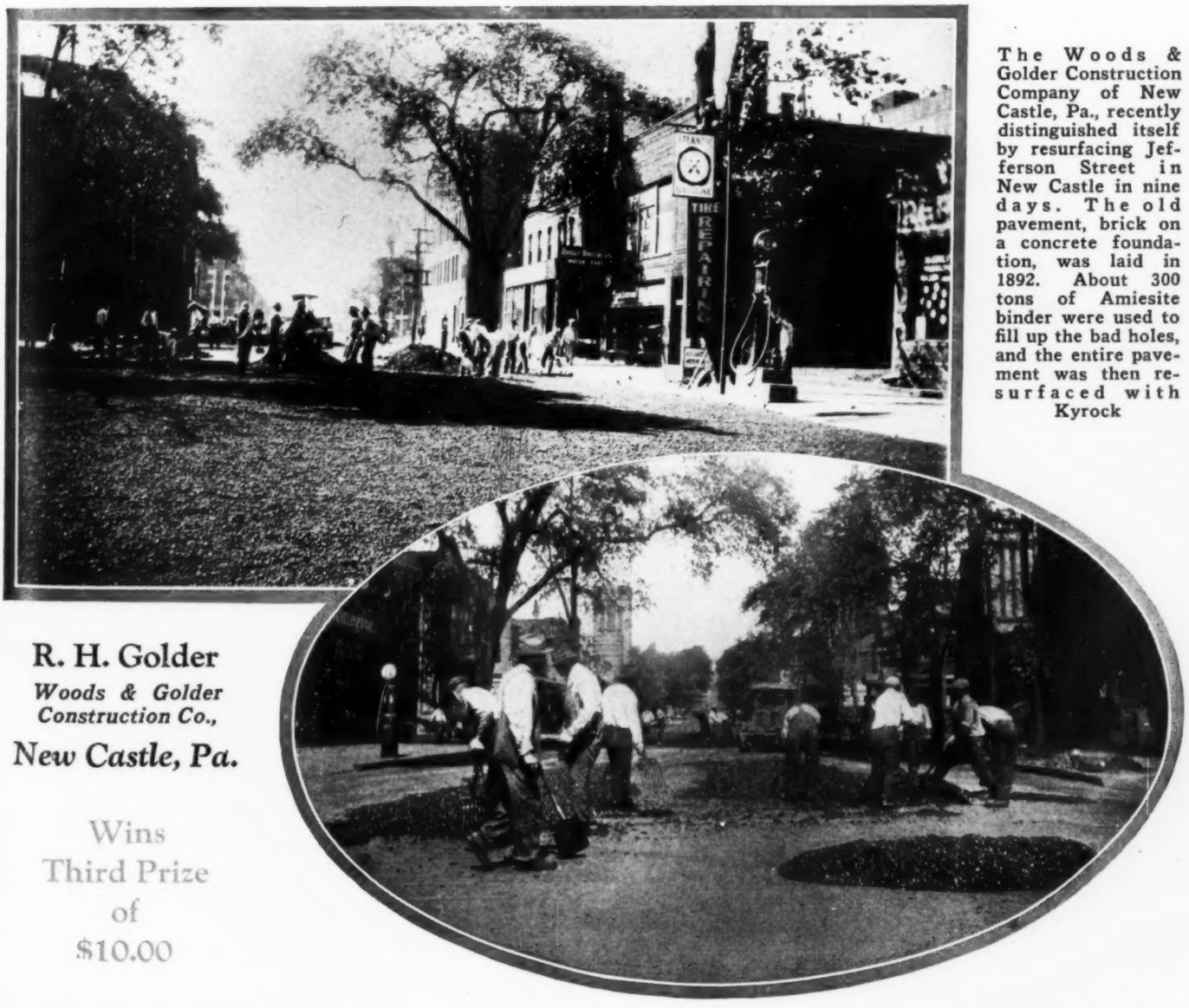
Excavating for the foundations of the power house is being carried on in the foreground, both by hand and by Erie steam shovels. The excavated material was handled in 2-yd. scale pans and dumped by the derricks at the right into 6-cu.yd. dump cars. A train of dump cars is shown on the trestle in the upper left - hand part of the photograph

Everybody Has a Chance

DESPITE the fact that the construction season of 1927 is nearing its close in the northern half of the country, the interest in *Construction Methods'* photographic contest seems to be rapidly increasing. The prize winners this month come from Cuba, Alabama and Pennsylvania in the order named. There are three prizes each month: first, $25.00; second, $15.00, and third, $10.00. Everybody has a chance to win.

THE conditions are stated herewith: Photographs must be taken by a man actually employed on the job and should be sent to *Construction Methods,* Tenth Avenue at Thirty-sixth Street, New York City, by Thursday, November 10, and plainly marked Photographic Contest. Photographs received after that date will be entered in the January, 1928, contest. *Construction Methods* will pay for all non-prize winning photographs used.

A Nine Days' Wonder



The Woods & Golder Construction Company of New Castle, Pa., recently distinguished itself by resurfacing Jefferson Street in New Castle in nine days. The old pavement, brick on a concrete foundation, was laid in 1892. About 300 tons of Amiesite binder were used to fill up the bad holes, and the entire pavement was then resurfaced with Kyrock

R. H. Golder
Woods & Golder Construction Co.,
New Castle, Pa.

Wins
Third Prize
of
$10.00

Collapsible Forms for Tulsa Sewer

Prove Their Worth Where 8-Ft. Concrete Pipe Crosses Lake

ON a monolithic concrete storm sewer job which he recently finished for the city of Tulsa, Okla., C. M. Brown, the contractor, used collapsible wood forms of a simple type.

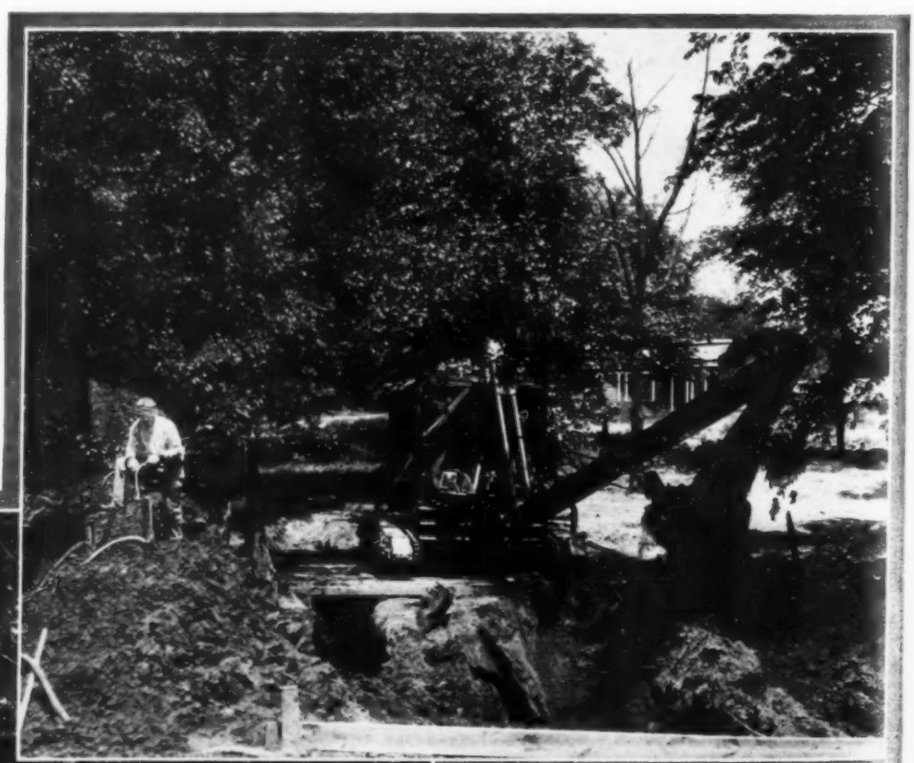
The crown and invert forms are both hinged in the center. The end views show a beveled edge where the crown and invert forms come together to make the joint. A V is formed along the line of contact by putting one on top of the other and wooden wedges are driven into this V when the forms are placed in the trench. To remove the forms after the concrete has set, it is necessary only to knock out the wedges and to remove the cross-braces. The forms then can be collapsed.

The forms are most useful on parts of the work where the full section of the sewer is poured in one operation. Mr. Brown's contract was for 1,920 ft. of sewer. For 1,300 ft., it specified 8½-ft. pipe with 11½-in. walls. On this portion of the job the concrete for the invert and for the crown was placed on different days. The recess in the invert contains special vitrified clay liners.

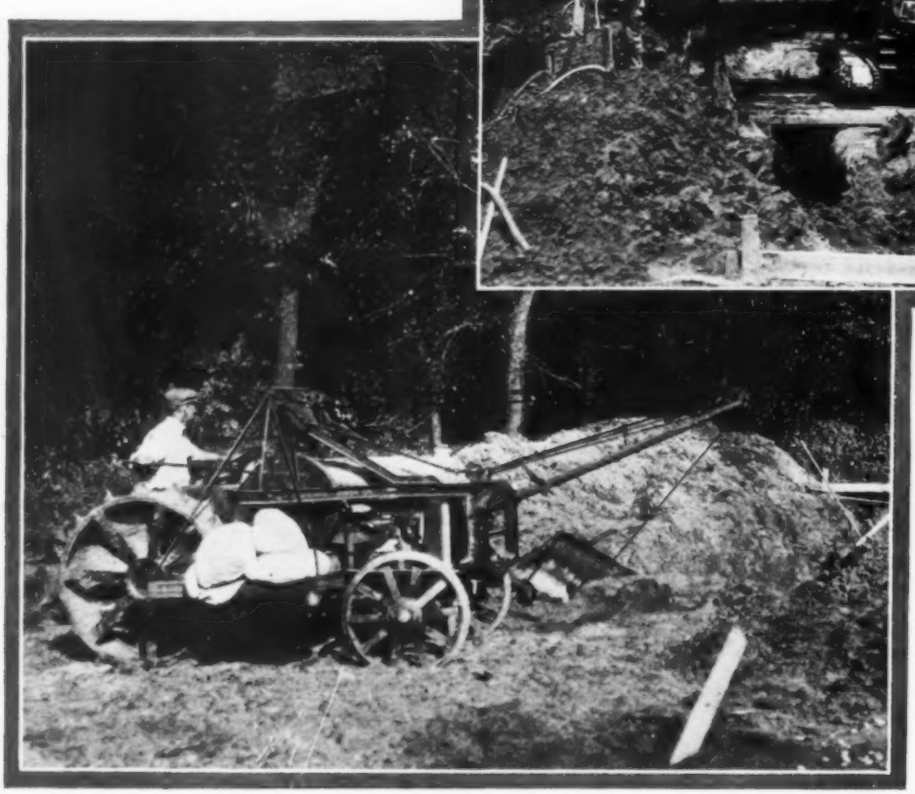
On the 620 ft. which crossed Owen Park Lake, the full section of the sewer was poured at once. The forms here displayed their greatest usefulness. The lake crossing is made with 8-ft. pipe, having a wall thickness of 15 in. and containing 62 lb. of reinforcing to the lineal foot. The walls were waterproofed by the addition to the mix of 5 per cent, by volume, of hydrated lime.

A Byers Bear Cat dug the trench, and a 13-E Koehring paver mixed the concrete.

The sewer was constructed under the general supervision of Charles Schultz, city engineer. W. R. Wooten is storm sewer engineer.

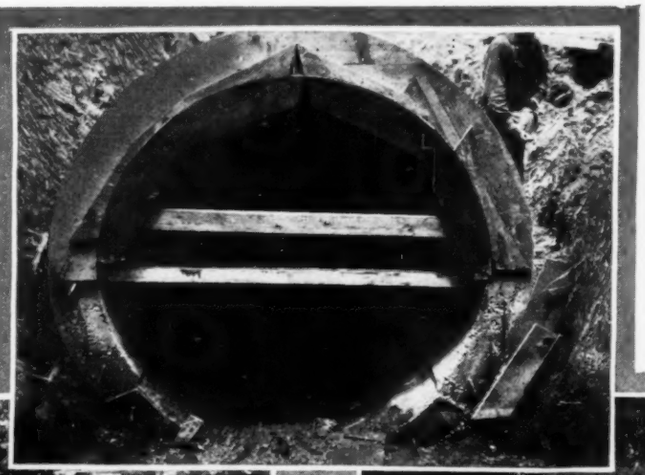


This Byers Bear Cat dug the trench for the 8-ft. concrete wall



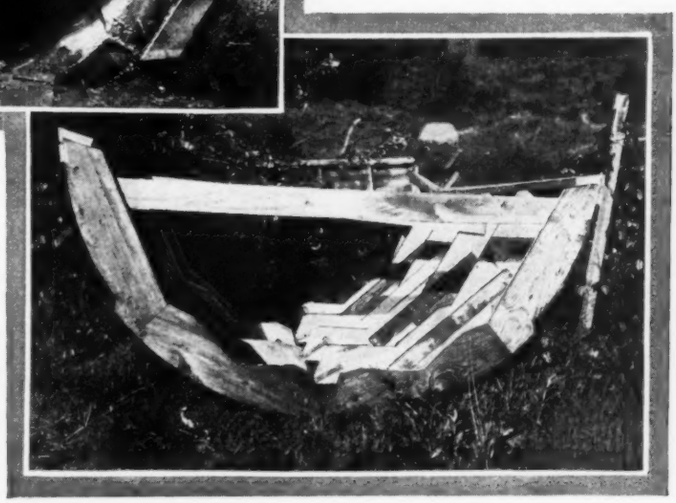
A Henderson backfiller attached to a Fordson tractor handled excavation as well as backfilling

Part of the sewer was poured in two sections. Interior crown form is still in place.



Below—The inside crown form. Note the hinges and beveled edges where the forms come together to make the joint

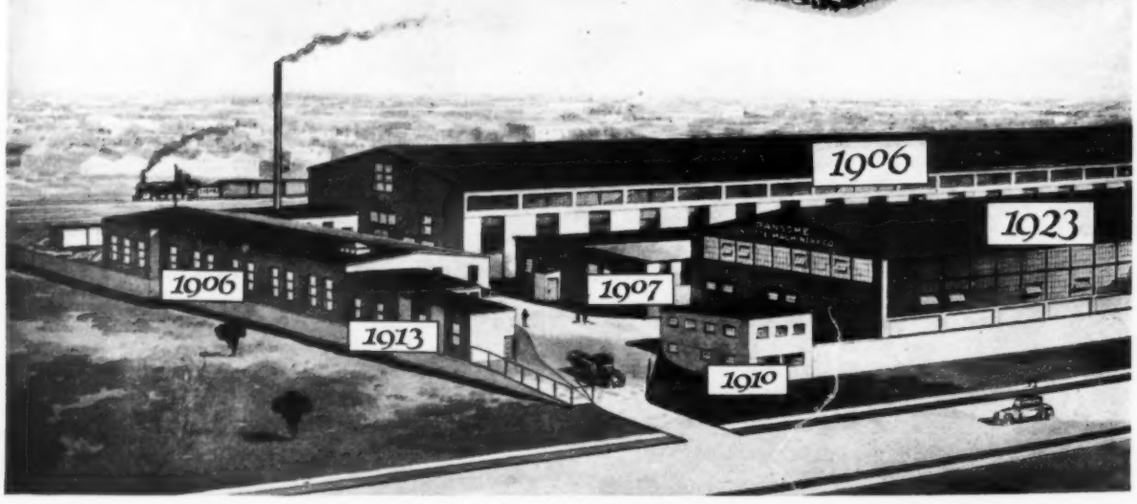
Below—The invert form. The depressed portion, extending through 108 degrees, forms the recess in the concrete for the lining



Below—C. M. Brown takes a hand in the proceedings. He is the man directing the placing of the concrete

Confidence

Confidence in the marksman, the rifle and the assistant is required to perform a stunt like this (*Drawing from an actual photograph*).



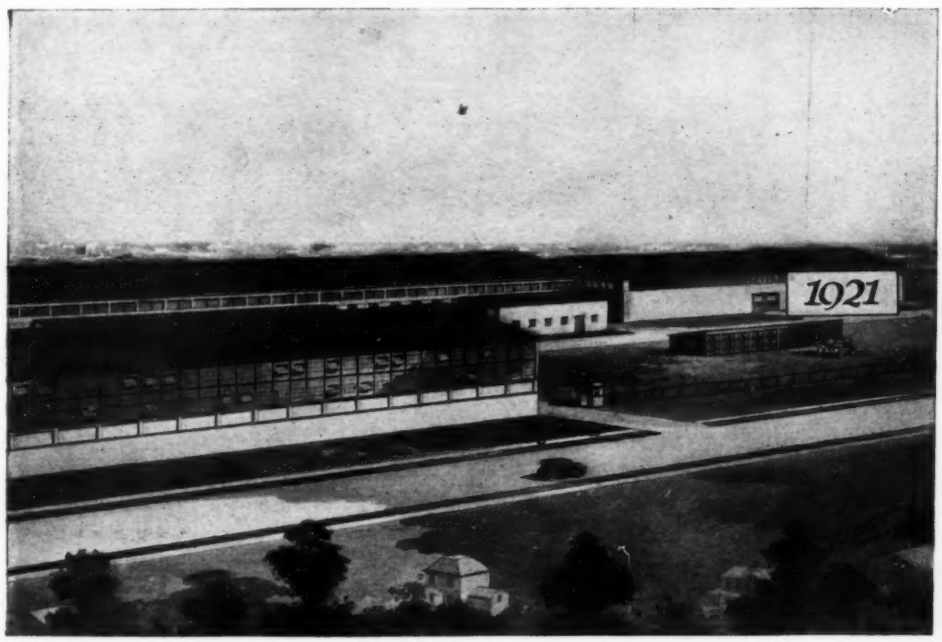
• RANSOME •

Confidence

THE steady growth of the Ransome Concrete Machinery Company is the best evidence of the confidence Ransome holds among the leading construction companies and contractors throughout the world.

The first Ransome Mixer was made 77 years ago. In 1906, the first unit of the modern plant shown below was erected in Dunellen, N. J. Since then, five other units have been erected and a new addition is now in the course of construction.

Before buying concrete mixers, road pavers and concrete handling equipment, be sure to get information from the nearest Ransome representative.



RANSOME DOMESTIC REPRESENTATIVES

ALBANY, N. Y.
Sager-Spuck Supply Co., Inc.
ASHEVILLE, N. C.
North State Culvert & Machinery Co.
ASTATULA, FLA.
Prescott Machinery Co.
ATLANTA, GA.
Henry G. Williams
B. F. Avery
BALTIMORE, MD.
Giles & Ransome
BIRMINGHAM, ALA.
Smith-Meadow Supply Co.
BOSTON, MASS.
The Clark-Wilcox Co.
BROOKLYN, N. Y.
Fitzgerald & Sheehan
BUFFALO, N. Y.
The Wheeler-Murray Co.
BUTTE, MONTANA
Western Supply Co.
CANTON, OHIO
J. C. Neely & Co.
CLARKSBURG, W. VA.
Clarksburg Supply & Equipment Co.
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W. Fred Casey and Co.
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Ransome Concrete Machinery Co.
CINCINNATI, OHIO
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COLUMBIA, S. C.
Construction Equipment Co.
DALLAS, TEXAS
J. W. Bartholow Co.
DAVENPORT, IOWA
The Johnson-Beckwith Equipment Co.
DENVER, COLO.
Clinton & Held Co.
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W. H. Anderson Tool & Supply Co.
FORT WORTH, TEXAS
J. W. Bartholow Co.
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Pidgeon-Thomas Iron Co.
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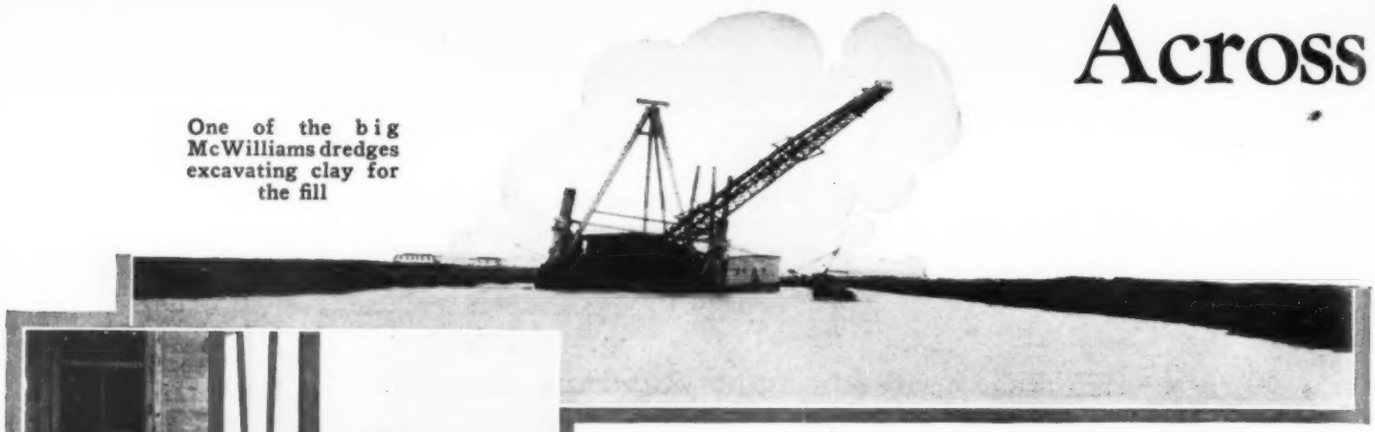
Wm. H. Hale & Co.
MOBILE, ALA.
Lawrence-Goodling Co., Inc.
MONTREAL, CANADA
Canadian Equipment Co.
NASHVILLE, TENN.
R. L. Stockard
NEWARK, N. J.
Johnson & Dealaman, Inc.
NEW HAVEN, CONN.
The Clark-Wilcox Co.
NEW ORLEANS, LA.
Ole K. Olsen
NEW YORK CITY
Fitzgerald & Hudson
NORTHPORT, N. Y.
F. G. MacDonald
OAKLAND, CAL.
R. T. McClelland
OKLAHOMA CITY, OKLA.
R. W. Ragsdale
PHILADELPHIA, PA.
Giles & Ransome
PITTSBURGH, PA.
Ruane Machinery Co.
PORTLAND, OREGON
McCraken-Ripley Co.
RICHMOND, VA.
Ed. P. Phillips Machinery Co.
ROCKFORD, ILL.
Swords Bros. Co.
SAN ANTONIO, TEX.
Brandt Iron Works
SEATTLE, WASH.
Star Machinery Co.
SPOKANE, WASH.
Hallidie Co.
ST. LOUIS, MO.
Lincoln Equipment & Materials Co.
SYRACUSE, N. Y.
The Wheeler-Murray Co.
TOLEDO, OHIO
National Supply Co.
TORONTO, ONTARIO
Clare Osborn, Ltd.
VANCOUVER, B. C.
B. C. Equipment Co.

Ransome Concrete Machinery Company

1850 — Service for 77 Years — 1927

Dunellen **New Jersey**

Across

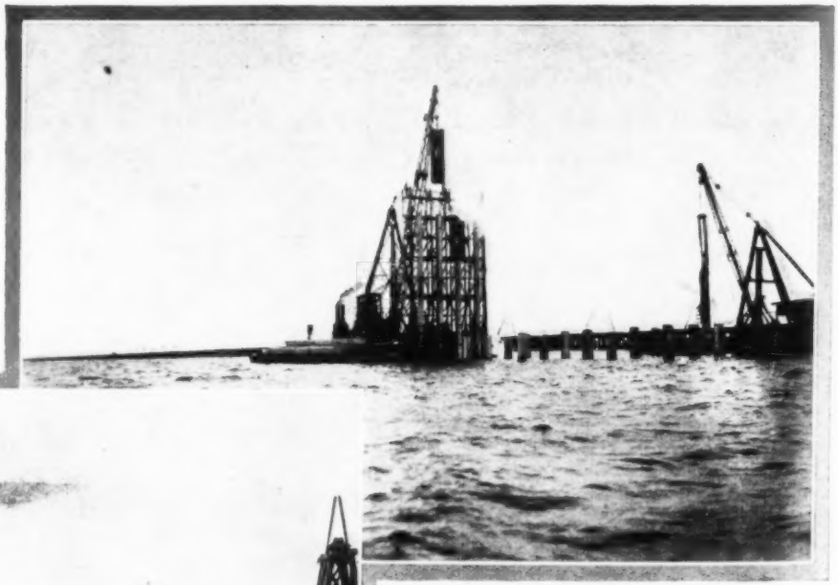


One of the big McWilliams dredges excavating clay for the fill

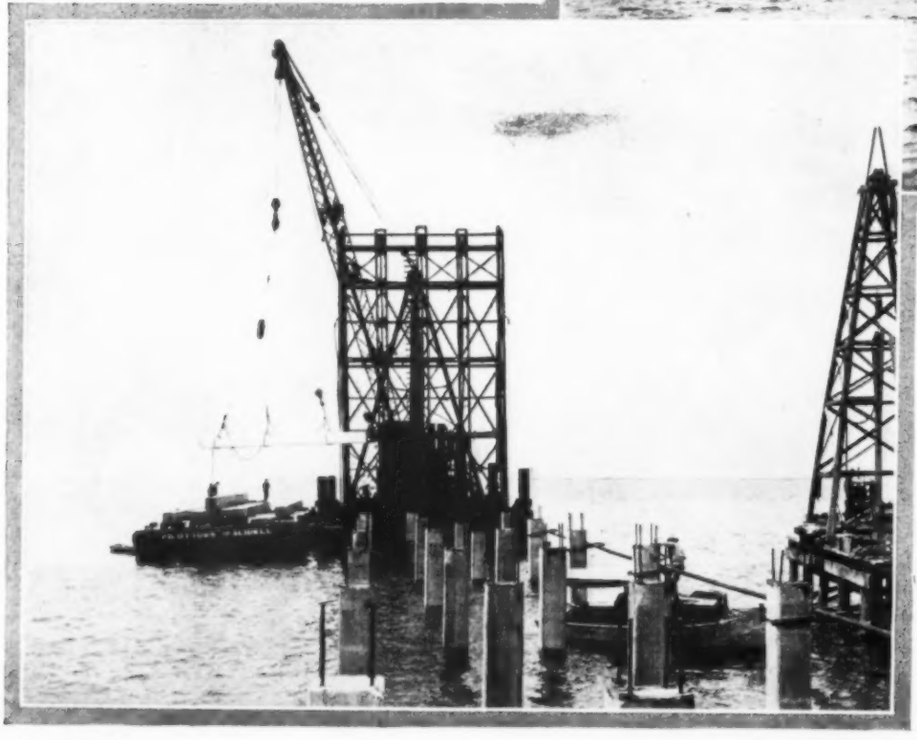
Left to right: O. O. Melancon, engineer for the McWilliams company; Fred J. King, highway engineer for Ford, Bacon & Davis, Inc.; George L. Heck, general manager, McWilliams company, and R. D. Freeman, Ford, Bacon & Davis

FIVE miles of concrete pile bridge and eight miles of dredged fill in the approaches are the principal items in the construction of a new highway connecting New Orleans with Slidell, La., on the Old Spanish Trail. The new road will shorten the distance between the towns and will eliminate two ferry crossings. It is being built by a private concern, the New Orleans-Pontchartrain Bridge Company, and will be operated as a toll road.

Lake Pontchartrain is a large, shallow body of brackish water. Four wells were drilled along the line of the bridge to obtain fresh water. For most of the crossing the depth is about 12 ft. The bridge runs north and south to the



At right—The piledriver with four leads. One Vulcan steam hammer is driving a pile. The other is being dropped on a pile by a Lambert derrick



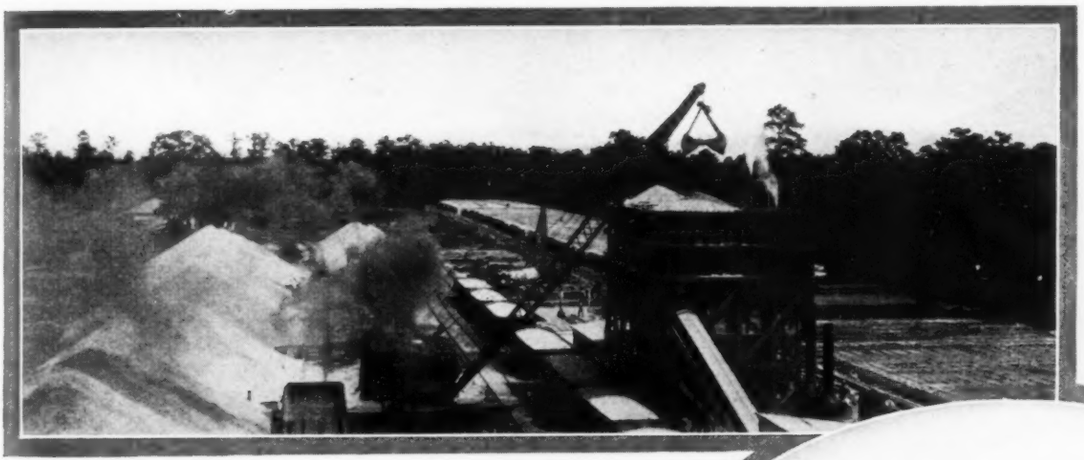
At left—Picking up a pile with the system of blocks and falls which gives an equal lifting force at three points

Lake Pontchartrain

east of the Southern Railway's timber pile trestle. As the lake is navigable, two double bascule spans are to be provided opposite the draw spans of the railway structure. At the southern ends, the two bridges are about one-half mile apart; but, as they approach North Shore station, they converge to within a few hundred feet of each other.

The material into which the piles are being driven is a good stiff clay. Piles 24 in. square and from 55 to 85 ft. long are being cast and installed. The unusual size and weight of the piles demanded special equipment. A plant capable of meeting all requirements was designed and built by the Raymond Concrete Pile Company, the contractor.

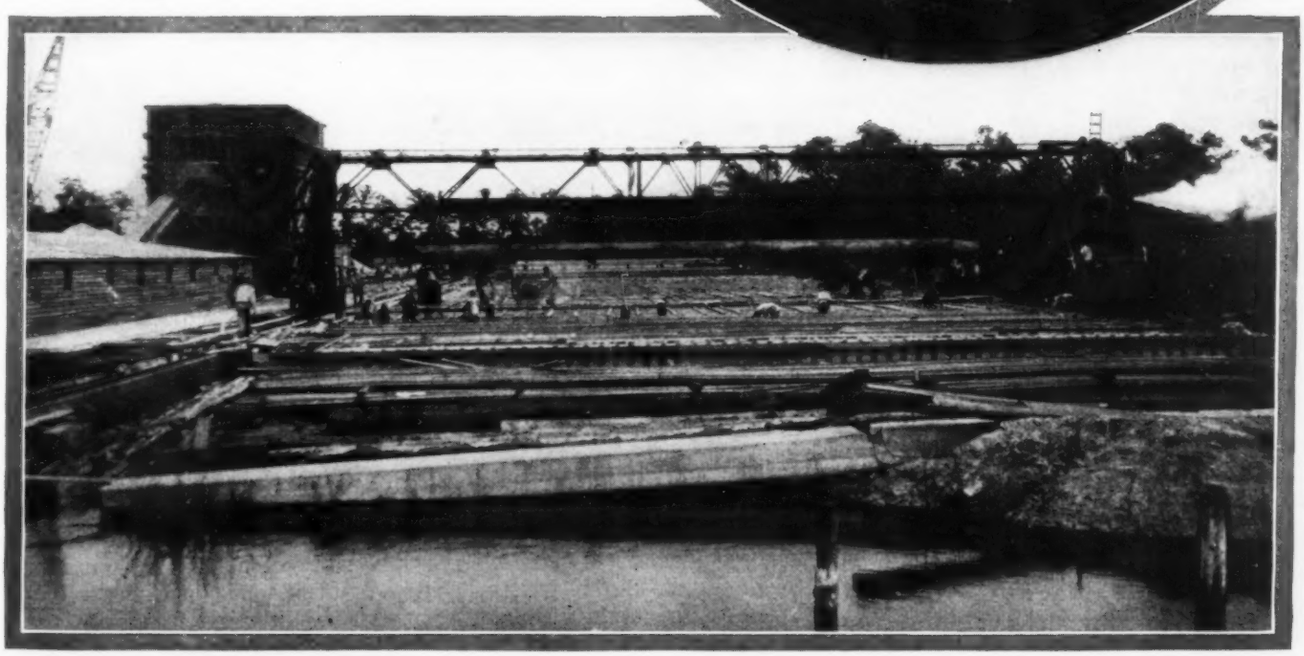
One of the impressive machines developed by the Raymond engineers is the piledriver with four leads. By means of this equipment, the four piles in a bent are set and driven in one operation without any change in the position of the driver. The leads can be moved transversely on rollers and longitudinally on greased plates. The spuds of the scow are dropped in approximate position, and adjustment is effected by moving the leads to obtain correct position. The



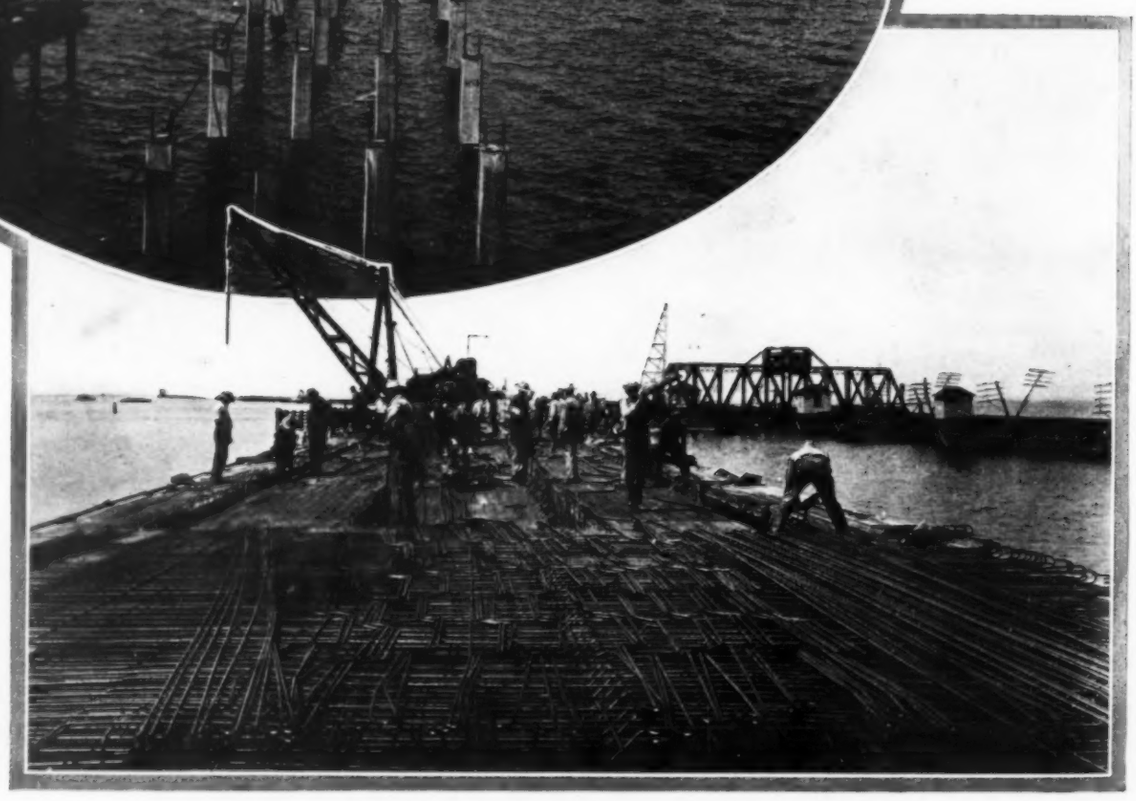
From the top of the 600-cu.yd. sand and gravel bins. One of the McMyler-Interstate locomotive cranes is loading the bins above the mixers. Casting and storage yards to the right

At right—A barge containing 10,000 sacks of cement being unloaded at the material yard. The sacks are dropped on hand cars below the aggregate bins to be transported to the storage shed at the right

Below — The gear-driven gantry crane taking a pile from the casting yard to the storage yard, seen from a barge which the crane has loaded with piles



The piles are driven in perfect alignment. A view looking back from the driver. One of the four wells to the left



Placing reinforcing steel for the deck. The movable derrick unloads the rods from barges directly at the point where they are to be used

two outside piles of the bent are then set and the final adjustment is made before the middle two piles are placed in the leads.

The piledriver scow is a 40x100x8-ft. barge. Two boilers, 180 hp. total capacity, supply steam to the nine engines on board. A 30-ton Lambert derrick lifts the piles, and two No. 0 Vulcan hammers do the driving. The scow is equipped with four double-acting spuds which prevent listing when the derrick swings to pick up a pile. Lateral and longitudinal movement of the leads is controlled by three screw-feed Dake engines. With this control it is possible to obtain adjustment to within $\frac{1}{8}$ in. of the desired position. The contract requires that piles be driven within 1 in. of true alignment. For a long time they were driven within $\frac{1}{4}$ in. of exact position.

A system of blocks and falls which does away with the need for an equalizer bar is used to pick up the piles. Slings are passed around the pile at three points, and tension in the main hoisting fall is transferred to each of these points as an equally distributed lifting force. An idea of the arrangement of blocks and falls may be gained from a look at one of the photographs. The system is too complicated to be described here. It works well in practice.

The casting and material yard is situated on the property of the shipbuilding company at Slidell, about twelve miles by water from the bridge. The aggregates for the concrete in the deck and bascule piers of the bridge are here transferred from railway cars to barges.

Two McMyler-Interstate locomotive cranes, each using a $1\frac{1}{2}$-cu.yd. bucket on a 54 ft. radius, unload twenty cars a day. Bins with a capacity of 600 cu.yd. discharge through chutes into the barges. A load of 200 cu.yd. can be run in 40 minutes.

The land on which the yard is built was partly swampy. Timber piles were driven under the material bins and the cement storage shed. The mixing plant, including its bins of 360-cu.yd. capacity, rests on concrete spread footings. The form yard in which the piles are cast is supported on 15,000 2x4 stakes about 6 ft. long, driven with a maul on 18-in. centers, each one capable of carrying a 600-lb. load.

Cement shipments are received in unbroken barge lots of 10,000 sacks from the mills of the Warrior Cement Company at Spocari, Ala. They are unloaded at the rate of about 5,000 sacks a day. The storage shed holds approximately 24,000 sacks when full. A belt conveyor connects the shed with the mixing plant.

The piles contain 28,000 cu.yd. of concrete. Eight sacks

of cement to the cubic yard is the proportion used in the mix. The mixing plant is equipped with two 1-cu.yd. Rex steam mixers and Blaw-Knox batchers and inundators. Forms for 132 piles were provided in the casting yard. The attempt is made to run 120 piles a week. Piles are left in the forms for 7 days and are kept wet for 30 days.

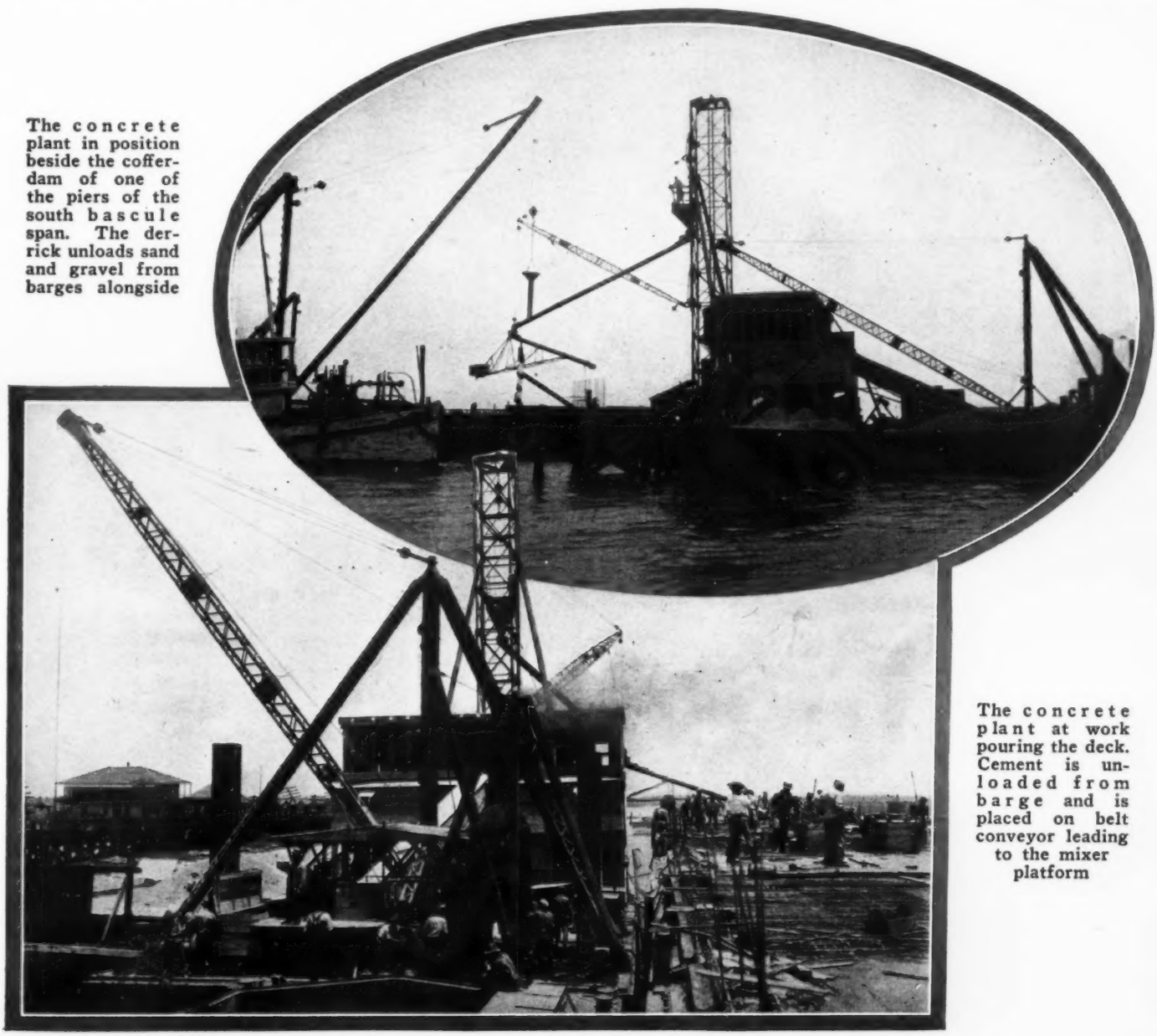
One of the photographs shows in action the gantry crane which carries the piles from the casting yard to the storage yard. About 1,300 piles were in storage at the time the picture was taken. They are kept in the storage yard 53 days. The gantry crane has a span of 102 ft. It is gear-driven, runs on single rails on both sides, and has a rated capacity of about 25 tons. The track extends over the water, enabling barges to be run underneath the crane to be loaded. Incoming steel, of which there are about 2,400 tons in the piles, is unloaded by the same means. The crane runway is approximately 1,500 ft. long. A mile of railroad track is laid in the yard to provide for material cars and movement of locomotive cranes.

The floating concrete plant, which mixes all concrete for the deck and bascule piers, is equipped with two 1-cu.yd. Koehring mixers, Blaw-Knox batchers and inundators, and a 65-ft. Insley tower. Cement is unloaded from a barge at the rear directly on to a conveyor. Sand and gravel are handled by derrick and clamshell buckets from barges alongside.

Reinforcing steel for the deck is unloaded by a movable derrick which runs on the forms. The derrick appears in one of the photographs. Its boom is operated by a 2-drum gas hoist engine. Steel is bent at the mill and placed on barges, from which it is unloaded by the derrick on to the portion of the deck where it is to be installed. This piece of equipment thus saves two handlings of the reinforcing rods.

The amount of dredging is estimated at approximately 1,500,000 cu.yd. Four dragline dredges are in use. The surface of the marsh is covered for most of the distance with a layer of muck from 5 to 8 ft. thick. This material is wasted, and the good clay beneath it is excavated to make the fill. It is necessary in many places to keep building up the fill, as the material subsides after it has apparently become stable. This settlement is caused by the flowing of the fill beneath the surface, the surrounding material being pushed up by the weight of the accumulated clay. The McWilliams Company, Memphis, Tenn., has the dredging contract.

The managing engineers for the project are Ford, Bacon & Davis, Inc., New York City. A. L. Black, vice-president in charge of the New Orleans office, is supervising construction. J. F. Green is resident engineer. The Elliott & Harman Engineering Company, Memphis, Tenn., and Peoria, Ill.,



The concrete plant in position beside the cofferdam of one of the piers of the south bascule span. The derrick unloads sand and gravel from barges alongside

The concrete plant at work pouring the deck. Cement is unloaded from barge and is placed on belt conveyor leading to the mixer platform

is acting in a consulting capacity. J. A. L. Waddell, New York City, designed the movable spans.

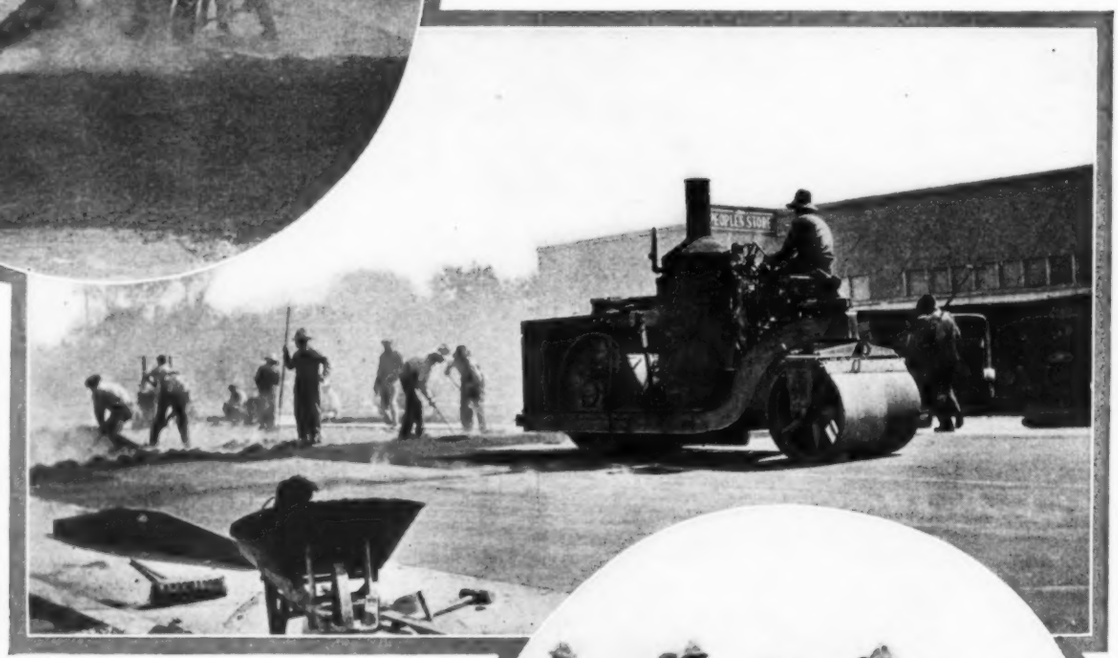
Operations of the Raymond Concrete Pile Company are under the general supervision of W. V. McMenimen, vice-president in charge of projects. Until the middle of June, work in the field was superintended by H. A. Christie, project manager. At that time his duties were assumed by his successor, James Purnell. For the McWilliams Company, George L. Heck, general manager, is in charge, with O. O. Melancon as engineer.

Black Base Roads in Oklahoma

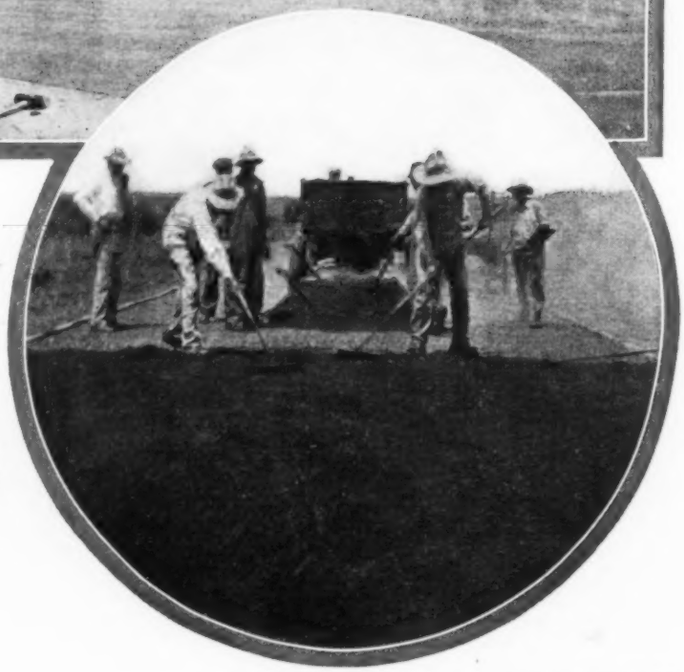
THE state of Oklahoma has been building considerable mileage of asphalt roads in the last year or two. The Guthrie-Crescent Road in Logan County is a typical example of the type of construction now in favor in Oklahoma. It is an 18-ft. road, except where it passes through the city of Crescent where it is 62 ft. in width.

The pavement consists of a wearing surface of 1 in. on a 4-in. foundation. The mix for the base course based on a unit mix of 800 lb., consists of 605 lb. of 1½-in. stone, 160 lb. of sand and 35 lb. of Texaco asphalt. The mix for the 1-in. wearing surface, also for an 800-lb. unit, consists of 355 lb. of rock asphalt of the limestone variety, 360 lb. of sand, 50 lb. of Texaco asphalt and 35 lb. of rock dust.

Above—Spreading a fresh batch of asphalt for the wearing surface

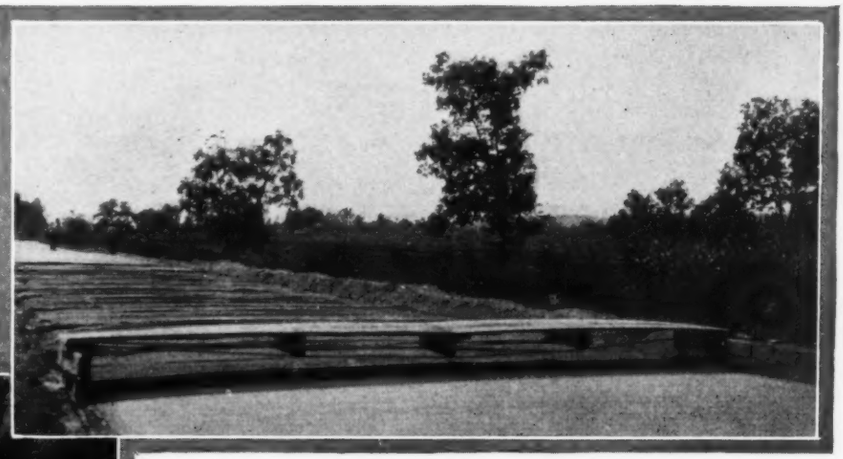


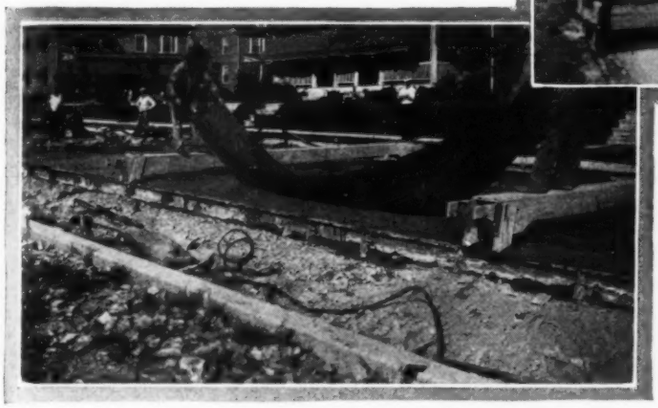
Above — Where the highway runs through the city of Crescent, it is 62 ft in width



At right—Raking over the asphalt wearing surface before rolling

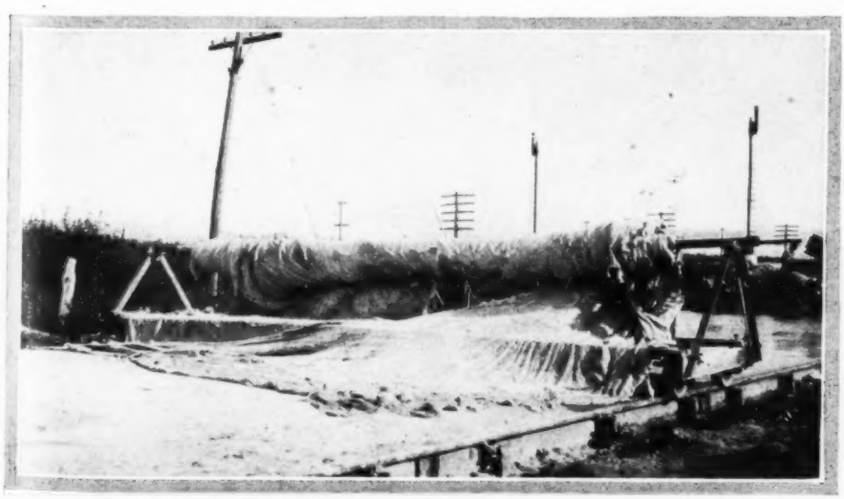
Handling Burlap for Curing Concrete Pavement





HANDLING the burlap is one of the operations which, on most paving jobs, requires the use of considerable labor. The ordinary practice is to spread the strips by hand, the bridge shown in the foreground of the photograph above being used by the laborers in passing one end of each strip across the pavement. Two men engaged in laying burlap by this method are shown at the left. Occasionally the burlap strips are piled on a rolling bridge, wet down, and then lifted off and laid on the pavement as the bridge is rolled along the forms.

ON the job recently completed by the American Paving Company at Olathe, Kan., a new plan was used. The burlap strips were sewed together into sections about 18 ft. wide and 100 ft. long. Each of these sections is rolled on to a piece of ordinary 2-in. pipe about 20 ft. long, as shown above. When burlap is to be laid, one of these sections is put on a rolling bridge.

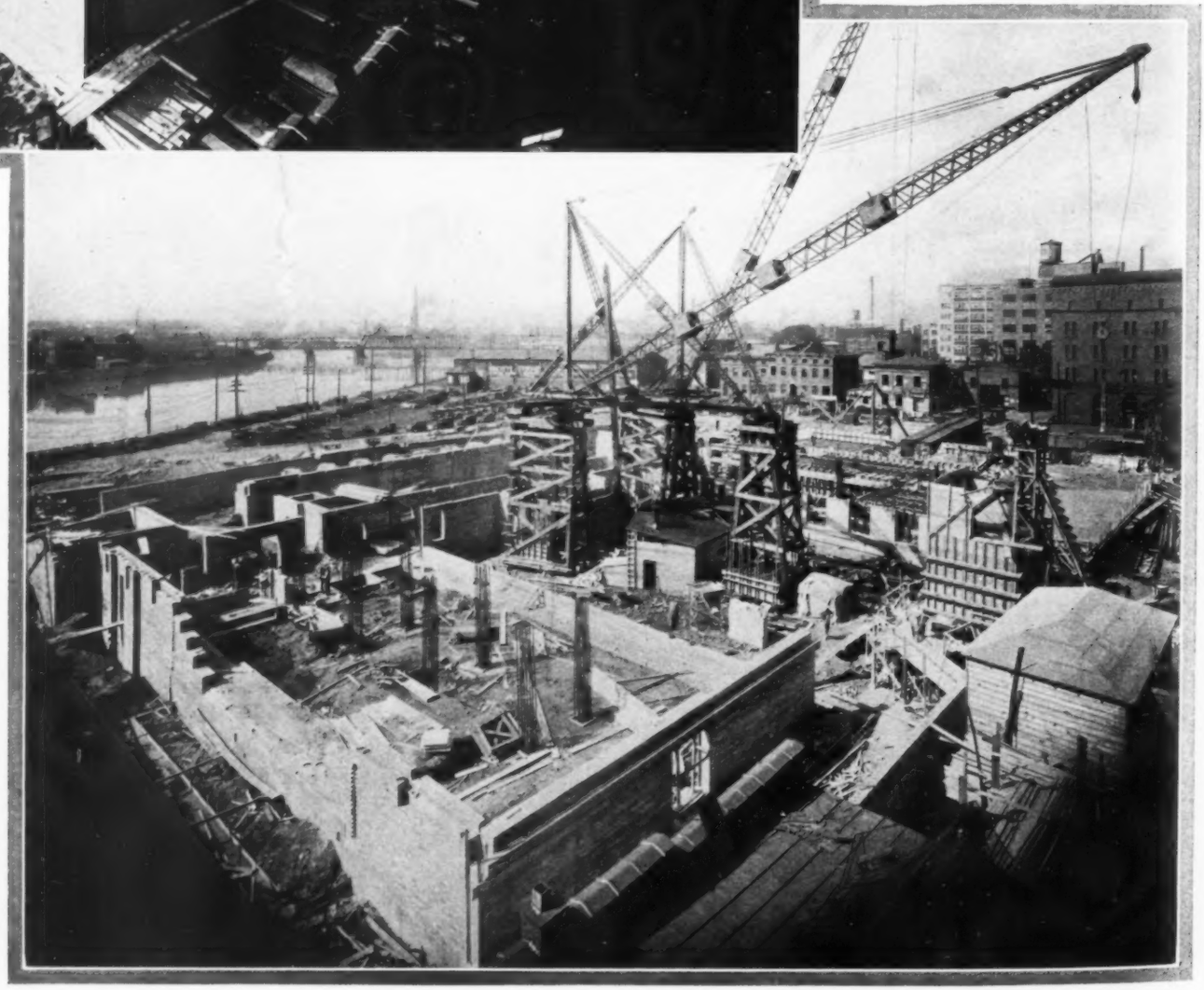


ON the end of this bridge supports carrying bearings for the pipe have been fastened. The photograph at the left shows this outfit. The free end of the burlap is then rather roughly fastened or weighted down, and the burlap section unrolled as the bridge is rolled along the forms. The bearing which supports the roll of burlap is shown above.

Two Big D

TWO big steel stiff-leg derricks have done nine-tenths of the work in the construction of the new City Hall at Columbus, Ohio. The building is U-shaped surrounding a court 74 ft. wide and 90 ft. deep, and the two derricks were set up on three wood towers in this court. These wood towers are approximately 35 ft. high and were built on concrete bases with the sill blocks bolted to the bases. Cables were looped under the bottom timbers of the towers to tie down the derrick sills. The timbers were weighted with a carload of paving blocks, divided among the three towers. The two derricks, manufactured by the Insley Manufacturing Company, have 110-ft. booms and 45-ft. masts. They have a capacity of 3 tons at a radius of 110 ft. and about 5 tons at a 90-ft. radius. At first a little vibration was encountered in the long booms when they were brought to a quick stop. To do away with this, the boom lift lead was disconnected from its fastening near the tip of the boom and was becketed at about the middle.

The derricks handled all the material on the job except the concrete in the basement walls and piers.

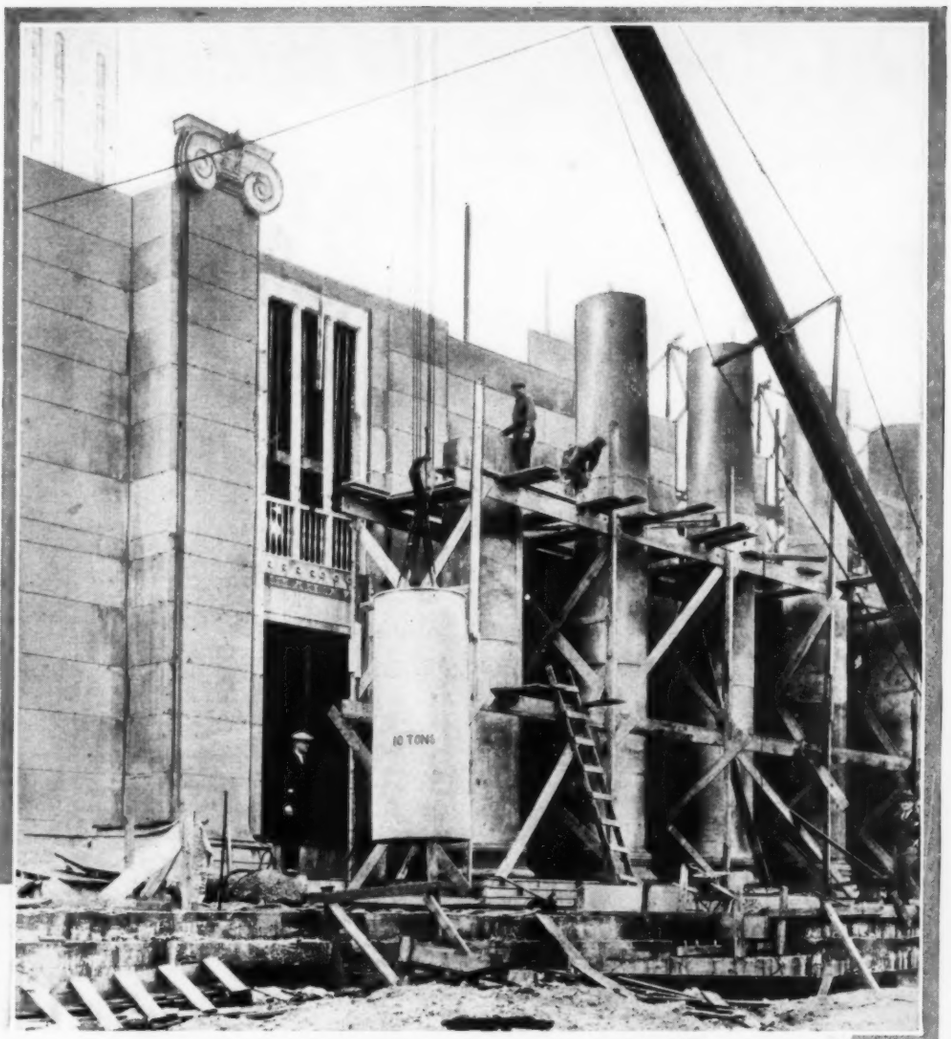


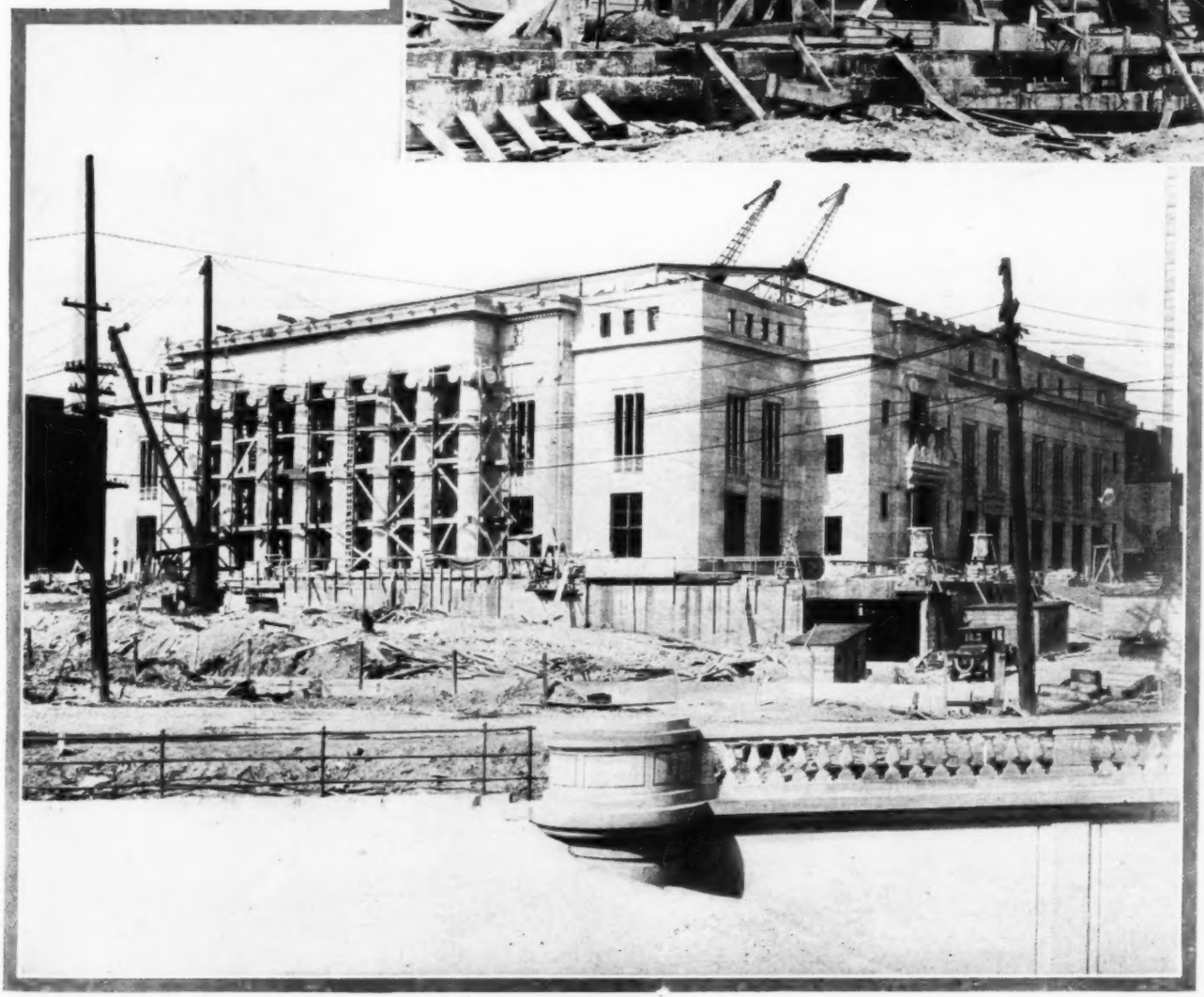
Big Derricks

Much of the material was brought in by freight cars which were run on spur track at the north side of the building. These cars were within reach of one of the derricks which unloaded the material and deposited it within the court where it was within reach of both derricks.

Extra equipment was required to handle the eight limestone columns across the front of the building. The 10-ton sections were lifted from the freight cars by a gin pole and later put in place with a guy derrick set up by the large derricks, the same stick which had served as a gin pole being used as a mast. This mast was about 55 ft. high, and a boom 70 ft. long was constructed of two 14x16 timbers, butt jointed in a spider and trussed with steel rods. This equipment was furnished by the American Hoist & Derrick Company.

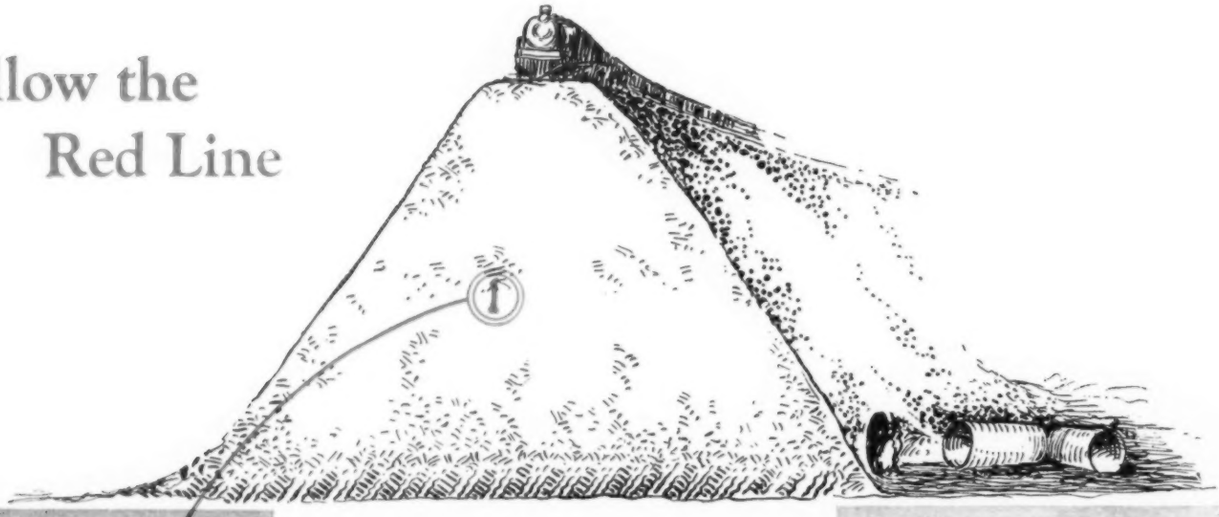
The contractors handling the work are Boyajohn & Barr, Inc., of Columbus. G. D. Bayman is superintendent. C. M. Barr is responsible for the use of the two big derricks. The Allied Architects' Association of Columbus, Ltd., designed the building, and Scott Fullerton is job superintendent for the association.

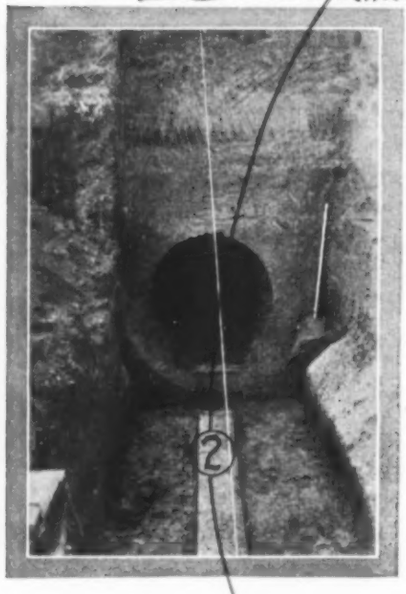




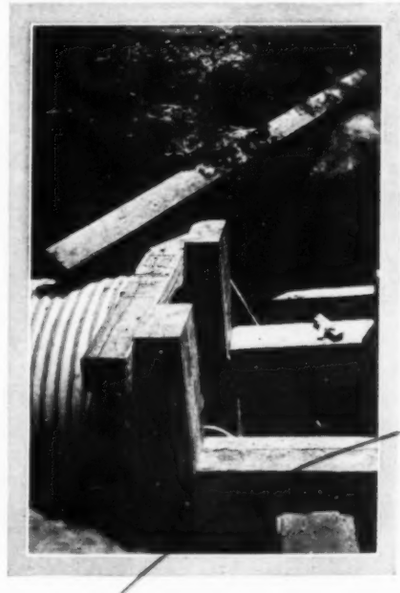
Step-by-Step Field Methods—

Follow the Red Line



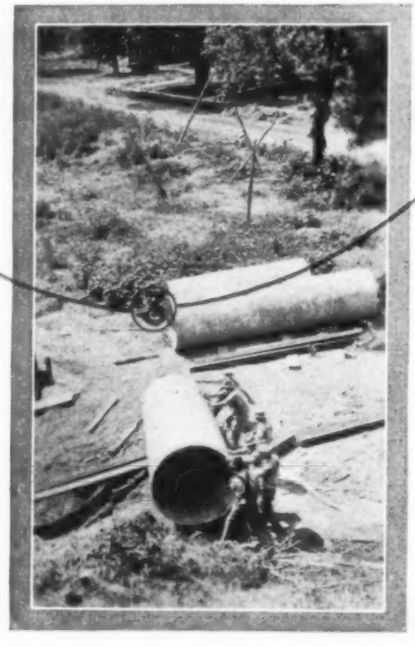


1. The problem was to run a culvert consisting of Armco 60-in. pipe through this fill without disturbing traffic on the Missouri Pacific Railroad and at the lowest possible cost. The plan adopted was to jack the pipe through



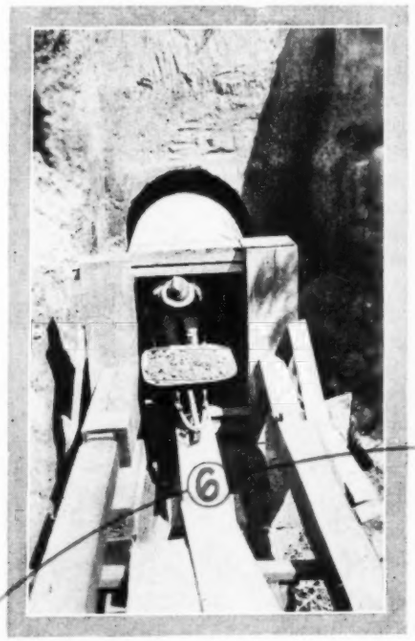
3. The first section of 60-in. pipe being rolled into the trench. No special equipment was needed for handling the pipe

2. The approach trench ready to receive the first section of pipe. Timbers were placed in the bottom of the trench to guide the pipe while being jacked. The line is for checking alignment and grade



4. A frame of timber was built to distribute the pressure evenly over the entire end of the pipe. Timbers removed from an old bridge were used for this part of the work

Jacking a Culvert Through a Fill

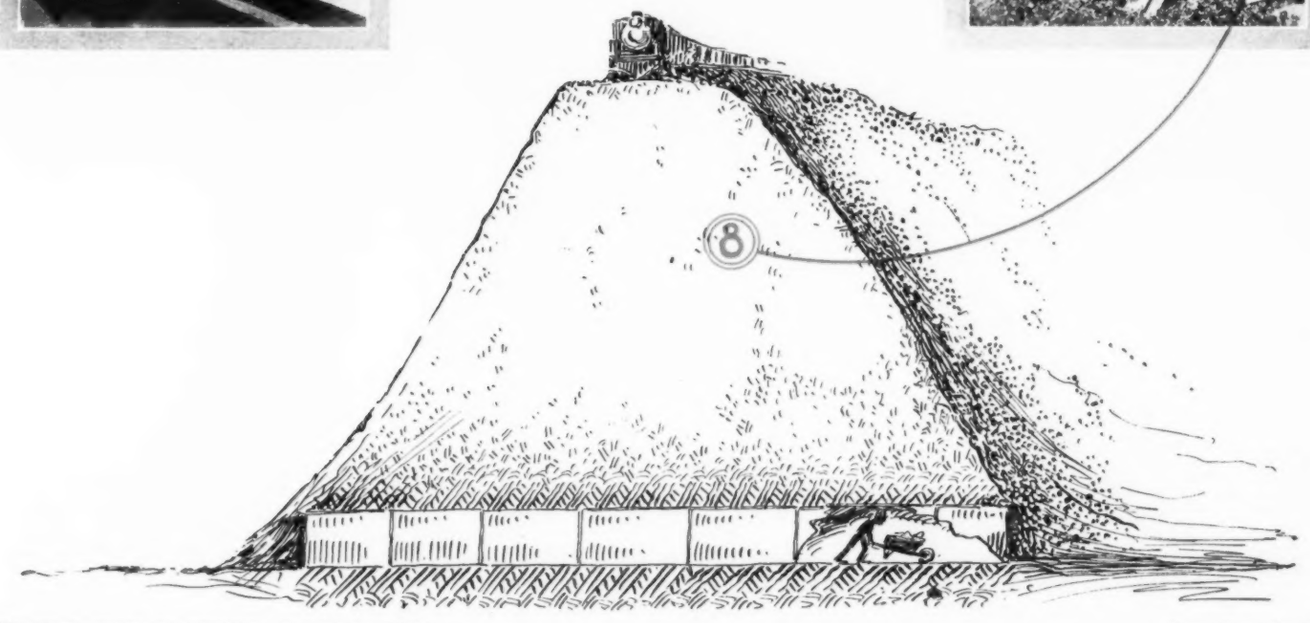


5. A strong timber backstop furnished a firm support for the jacks. Longitudinal timbers were used to transmit the pressure from the jacks to the bearing block placed over the end of the pipe

6. While one man excavates the earth inside the pipe, another man brings it out in a wheelbarrow. Excavating and jacking proceed simultaneously

7. The job from the top of the fill. A "booster" is helping the wheelbarrow while the two men underneath operate the jacks

8. The finished product. Pipe in place and timbers removed. Six men jacked 122 ft. of 60-in. pipe into place



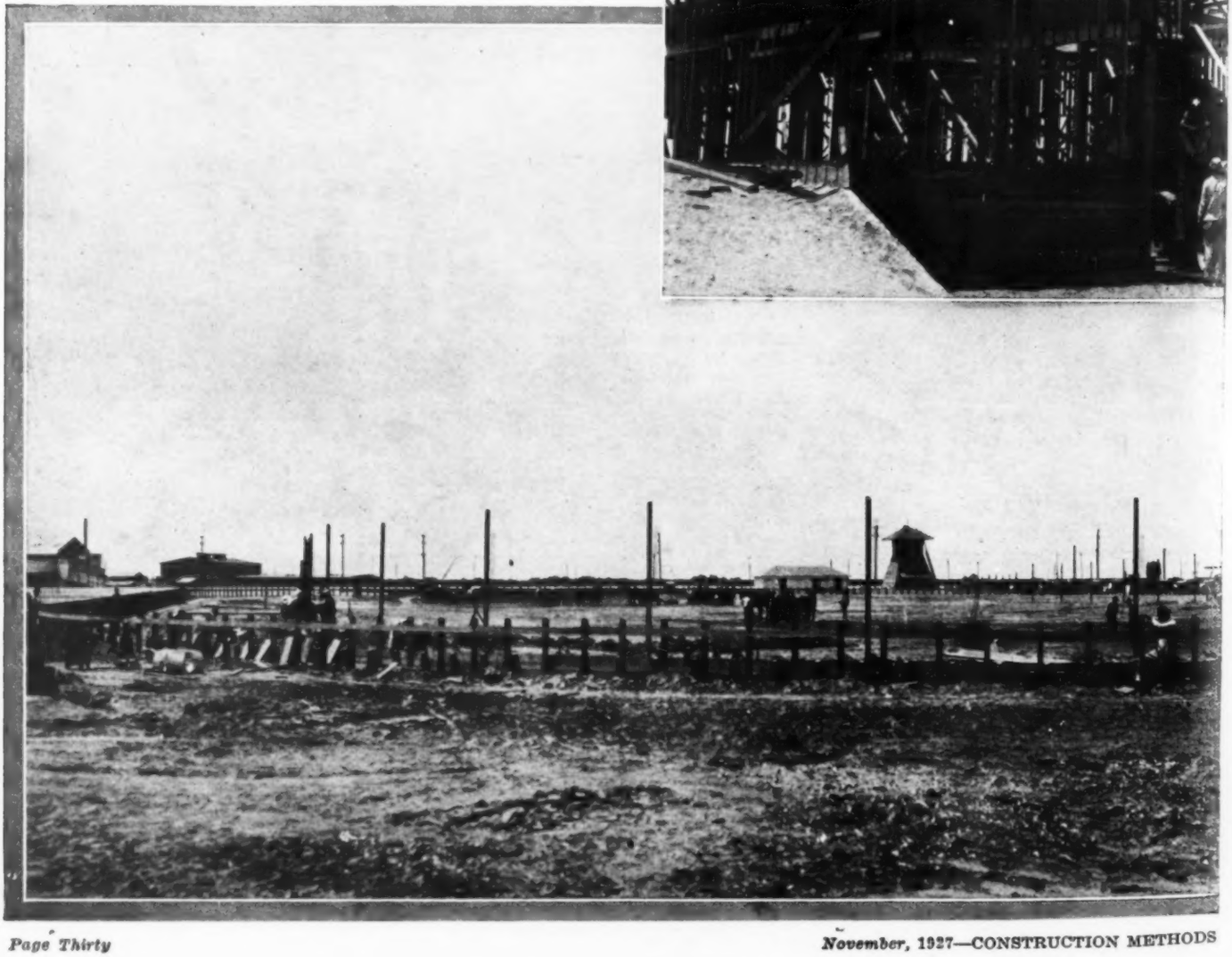
Contractors Set Pace

Create Atmosphere of Speed From Start in Building Dog Track in Texas

THE great popularity of whippet racing in the United States has resulted in the construction of a number of race tracks in recent years. The great state of Texas has not escaped the racing fever, as one may easily judge from a glance at the photographs spread across these pages. These pictures illustrate the bustling activity which followed the placing with some fast-stepping contractors of a rush order for one fully-equipped dog race track.

The photographs were taken when the Galveston Kennel & Fair Association, A. A. Rouprich, contractor for the grandstand, and O. P. Smith, contractor for the track, were making a united effort to have the course ready for racing at the earliest possible date. In the lower photograph teams and scrapers are at work on the track and enclosure. The land lies along Galveston Bay, and the soil is sandy, making easy material for grading with scrapers. The guard rail in the picture runs around the outside of the track.

In addition to the grandstand three kennels, a paddock, a tower, and an office building were included in Mr. Rouprich's contract. All the buildings are of wood frame con-



The grading of the track and the erection of the stands went on simultaneously under two different contractors. The lower photograph gives a general view of the job with the grading at the left, and the grandstand at the right

for Racing Greyhounds

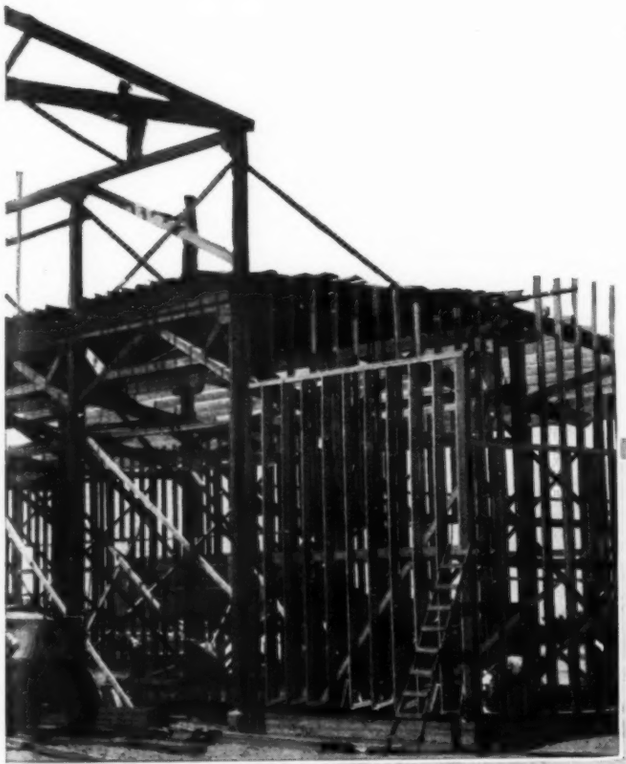
struction. The grandstand measures 76 ft. by 208 ft. in plan. Column footings and bearing walls are of concrete.

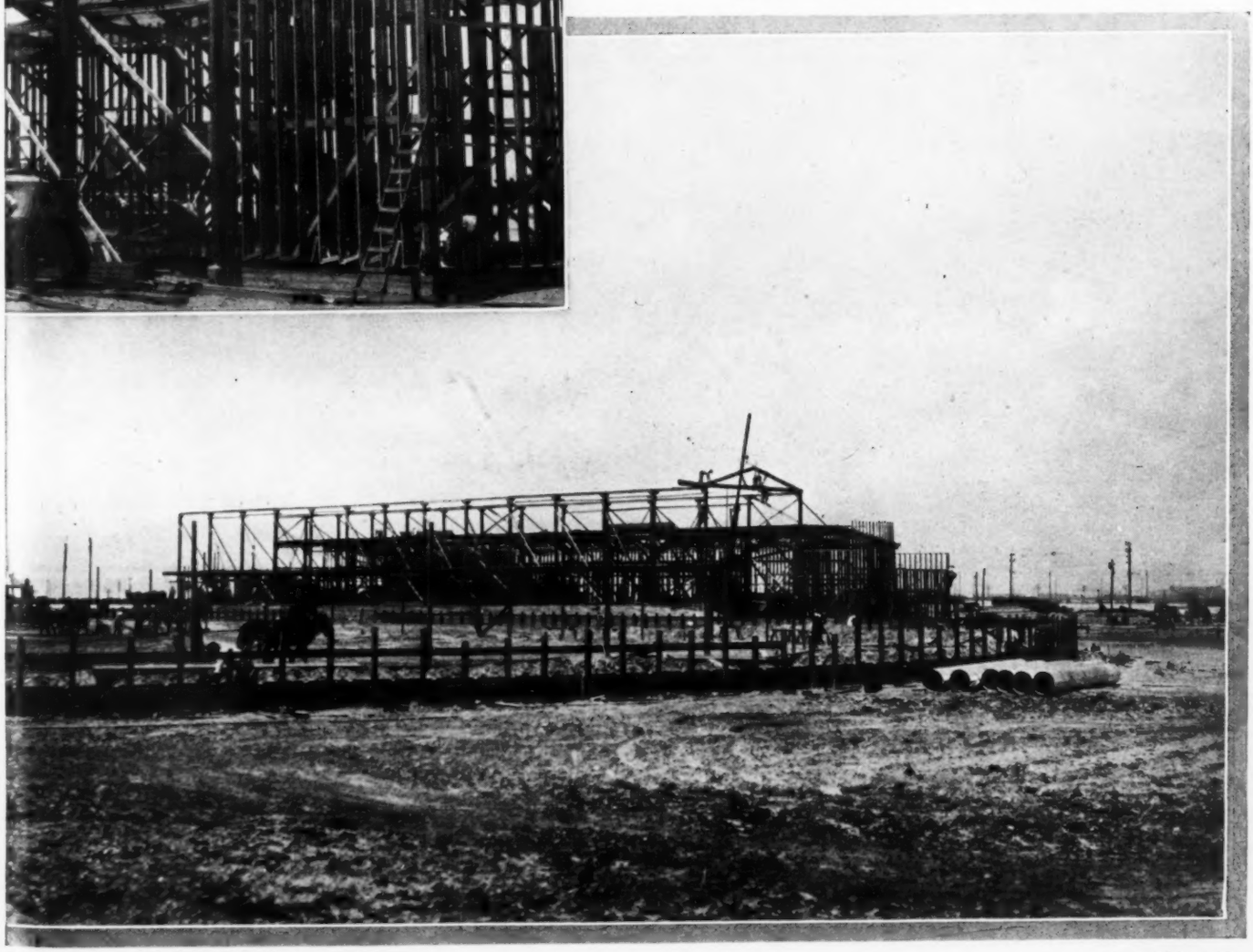
In handling the timbers for this structure, a Universal crane with a wood boom extension proved of valuable assistance. The machine is shown in the upper photograph setting the first roof truss. The boom extension was attached in one hour, and with it in place, the crane was able to set any piece of timber on the job. The time saving over old methods of erecting a wooden truss is easily seen. The same crane had been used originally for unloading sand and gravel. It could be reconstructed to its original form in a few minutes after finishing the timber erection.

The other buildings which Mr. Rouprich was erecting were all being rushed to completion with crews of competent workmen. The three kennels measured 24 ft. by 136 ft. in plan; the paddock, 32 ft. by 72 ft.; the tower, 20 ft. by 20 ft., and the office, 14 ft. by 35 ft.

The whole job was a good example of what can be done in the way of rapid construction by using a large force of workmen whose efforts are well directed. The problem of supplying large crews with materials to keep them busy is often encountered on rush jobs. On the dog race track, however, there was no difficulty of this kind. The site is along a concrete highway, and proximity to Galveston made prompt delivery by trucks possible. Lumber and other materials were usually stored several days in advance.

The operations of Mr. Rouprich and Mr. Smith were coordinated in such a way as to eliminate interference with each other's work. This co-operation was to their mutual advantage, as it did away with costly delays. By working together, each obtained the best results for himself.





The heavy work on the grandstand was handled by a Universal crane with a boom extension. It is shown in the upper photograph lifting one of the roof trusses into place. The structure was built of wood

Relining a Reservoir

Modern Machinery Keeps Down Labor Costs on Extensive Concrete Job for Pittsburgh Water Bureau

THE way in which the effective use of modern machinery can keep the payroll down is being demonstrated by A. V. Purnell, a Pittsburgh contractor, who has the job of relining the Highland Reservoir, a unit of the Pittsburgh water supply. This reservoir, built in 1887, has been a trouble maker for many years, as leaks developed soon after it was finished. About seven years ago, a large area of the slope was covered with a gunite coat 2 in. thick by Mr. Purnell, but this remedy was not entirely satisfactory.

A. L. Sutton, superintendent

Funds were provided by the 1926 bond issue to extend the gunite coat on the slopes and to waterproof the bottom. The gunite is being put on 2 in. thick over reinforcing of 4-in. electric welded No. 6 wire mesh. Two 4-in. concrete layers are being placed on the floor in 12-ft. squares, asphalt filler being used in the joints between squares. The joints of the upper slabs overlap those of the lower by 9 in. Single strip waterproofing is used between the two slabs. The membrane has a 36-in. width. This width gives approximately a 13-in. overlap on both sides of the upper and lower joints. Two layers of membrane and three moppings of asphalt are applied above the primer coat.

Four concrete guns were used in putting the 2-in. coat on the slopes. These were moved along the top of the bank as the work progressed, a total distance of

A. V. Purnell, contractor

At work in the bottom of the reservoir. Crane, trucks and finishing machine laid more than 14 miles of 4-in. concrete slab

The crane picked up the finishing machine and swung it from one set of rails to another

about 3,415 ft. Compressed air was supplied from a central station. The sand and cement were mixed and screened at a central plant and were hauled to the guns on small trucks.

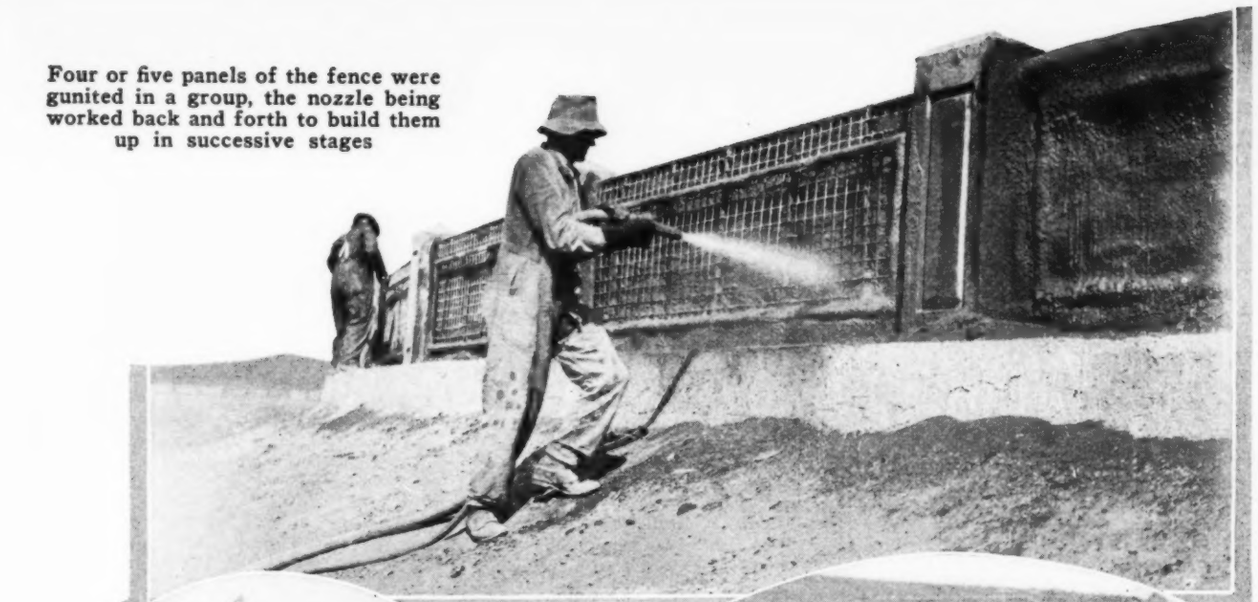
Unusual and successful methods were followed in laying the floor slabs. The slabs were put down in parallel strips, like highway surfacing, and were finished with a finishing machine. The use of this machine was the most striking feature of the job. A regular Lakewood machine for finishing a 12-ft. width did the work, the only change in its equip-

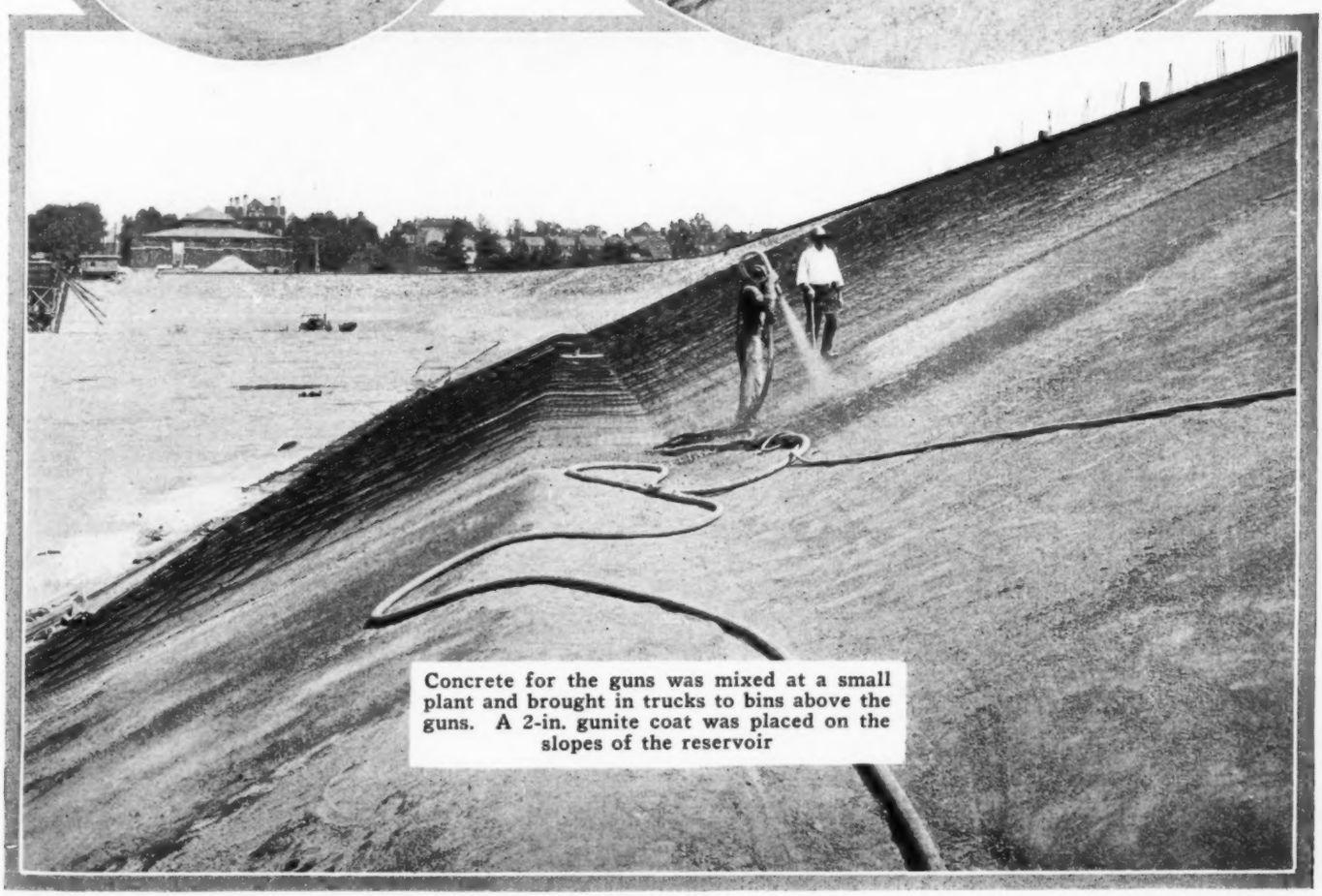
Laying the concrete slab. The mixing plant is shown in the circle at the right

Gage ties were used at the joints. Double-flanged wheels on finishing machine kept rails at gage distance

In the two oval photographs the joint strip is being set in place and protected. The large photograph at the bottom shows the placing of the impregnated cotton fabric

Four or five panels of the fence were gunited in a group, the nozzle being worked back and forth to build them up in successive stages





Concrete for the guns was mixed at a small plant and brought in trucks to bins above the guns. A 2-in. gunite coat was placed on the slopes of the reservoir

Trucks dump directly into the bins above the mixer

ment being the replacing of the single-flange wheels with ones having double flanges. This change fitted the machine to act as a track gage.

The reservoir is a sort of rounded, L-shaped bowl. Concreting was started along the length of one of the legs, the longest strip containing about 65 12-ft. slabs. The bottom layer was kept two strips ahead of the top. As soon as a third bottom strip had been laid, the placing of another top strip would begin. A Moore crane with a 50-ft. boom handled the concrete buckets across the two intervening bottom strips to the new top strip. Two sets of rails were provided, one for laying bottom strips and one for laying top strips. After the slabs had set for 24 hours, rails could be laid on the concrete.

Simplicity and ease of handling were two objects considered in the design of the rails. They were made of wood with a top strip 3 in. wide over which a channel was fitted to form the wearing surface of the rail. The sections were 12 ft., the same length as the slabs.

Joint connections were extremely simple. The channels were spiked to the wood strip so that one end was projected about 1 ft., and the other end was set back the same distance. In making a joint, the projecting channel of one section would be slipped over the bare strip of the other until the channels came in contact. The flanges of the channel kept the sections in alignment. The two sets of rails were so made that the finishing machine always ran on the overlapping channel.

One rail always rested on concrete 4 in. above the other. The upper rail consisted of a 2x3-in. strip laid on a 2x12 plank. The wide plank distributed the load over a greater area and prevented too much pressure from being put on the edge of a 4-in. slab only 24 hours old. The rail which rested on the lower level was built up of 3x4-in. strip on a 4x6-in. block. The 4x6-in. piece acted as a side form for the slab.

The rails were made in a structural shop, and holes were accurately drilled in the top to receive the pins of gage ties and angle braces. For most of the work gage ties were found to be unnecessary.

A simple method of forming the expansion joints every 12 ft. was developed. The position of the joints was marked by a small angle fastened to the 4x6 strip of the lower rail. The steel joint strips were $3\frac{3}{4}$ in. deep by $\frac{1}{4}$ in. wide. A support for this joint strip was made by welding two angle irons to small plates at several points, leaving a slot between the angles to receive the joint strip. The strip was driven into this slot, and the plates at the ends of the supporting angles rested on the concrete at one side and the 4x6 block at the other. A single brace from the rail to the angles was used. After concrete had been placed on both sides of the joint strip, the supporting angles would be pulled up.

The mixing plant was built on the side slope of the reservoir, with the cement shed and bins at the top. Trucks dumped directly into the bins. A gravity roller conveyor carried the cement from the shed down to the mixer. An Ahlers proportioning machine was used to control the water-cement ratio. The mixer was a Smith of $\frac{3}{4}$-cu.yd. capacity. The concrete was hauled from the mixer to the crane in Lakewood bottom dump buckets on trucks. As many as 300 batches, using a $1\frac{1}{2}$-minute mix, were put through the plant in one 10-hour day. From 100 to 122 slabs would be poured each day. Three men operated the plant.

A 4-in. gunite fence around the top of the reservoir was included in Mr. Purnell's contract. The 12x16-in. posts on 12-ft. centers were poured first. Gunite was applied to four or five panels in a group, the man with the nozzle working them in successive stages. The reinforcing was 4-in. mesh of No. 8 wire and vertical rods. Molds for the inside paneling were bolted to the steel outside forms.

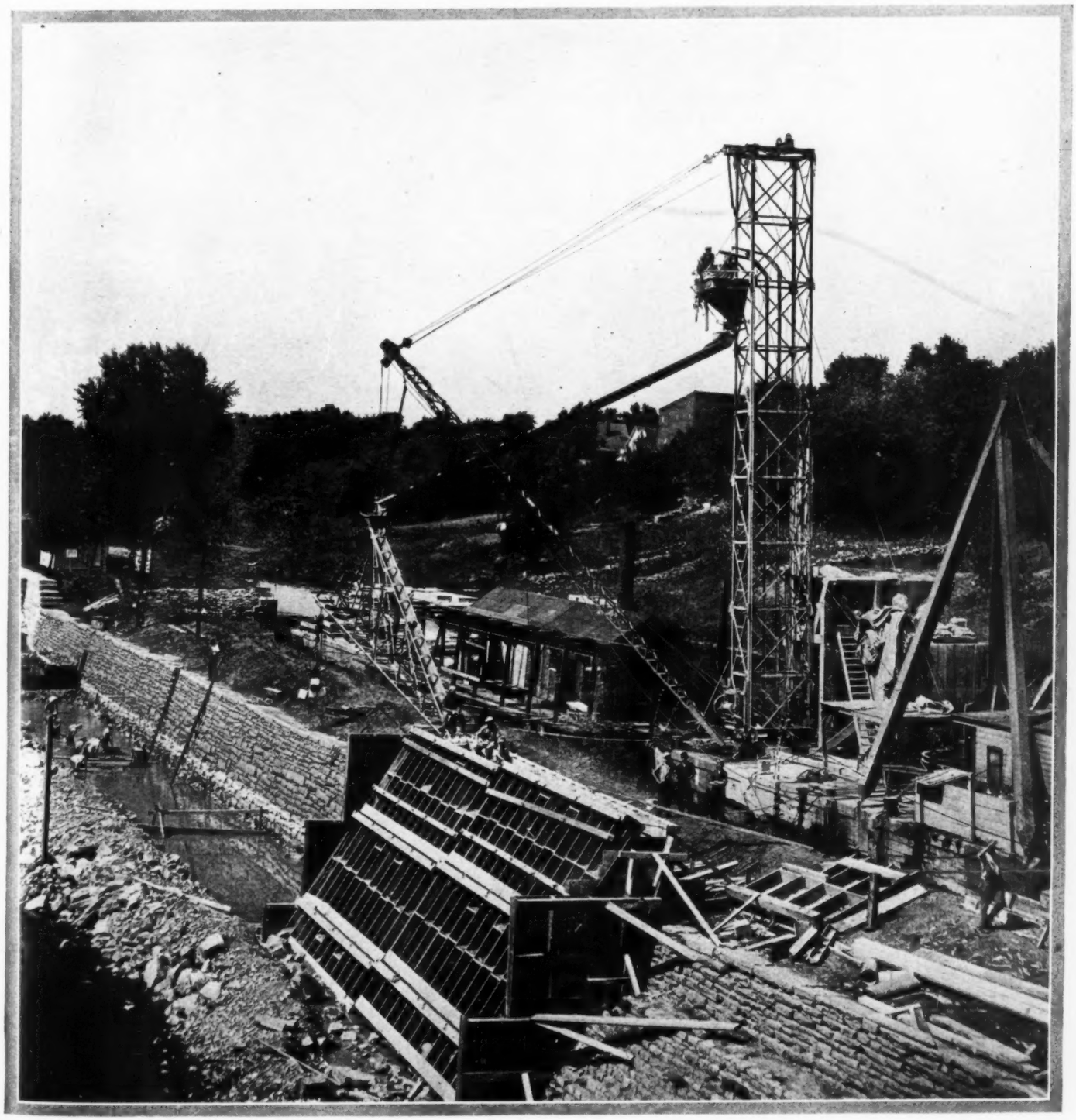
Mr. Purnell was actively in charge of the work. His superintendent was A. L. Sutton. Operations were under the supervision of the engineers of the Bureau of Water, Department of Public Works. Edward G. Lang is director of the department, and Charles M. Ruppert is chief engineer. For the Bureau, E. E. Lanpher is managing engineer, George L. Hendrickson is designing engineer, and J. H. Kennon is division superintendent of the distribution division.

Floating Plant Builds Retaining Wall

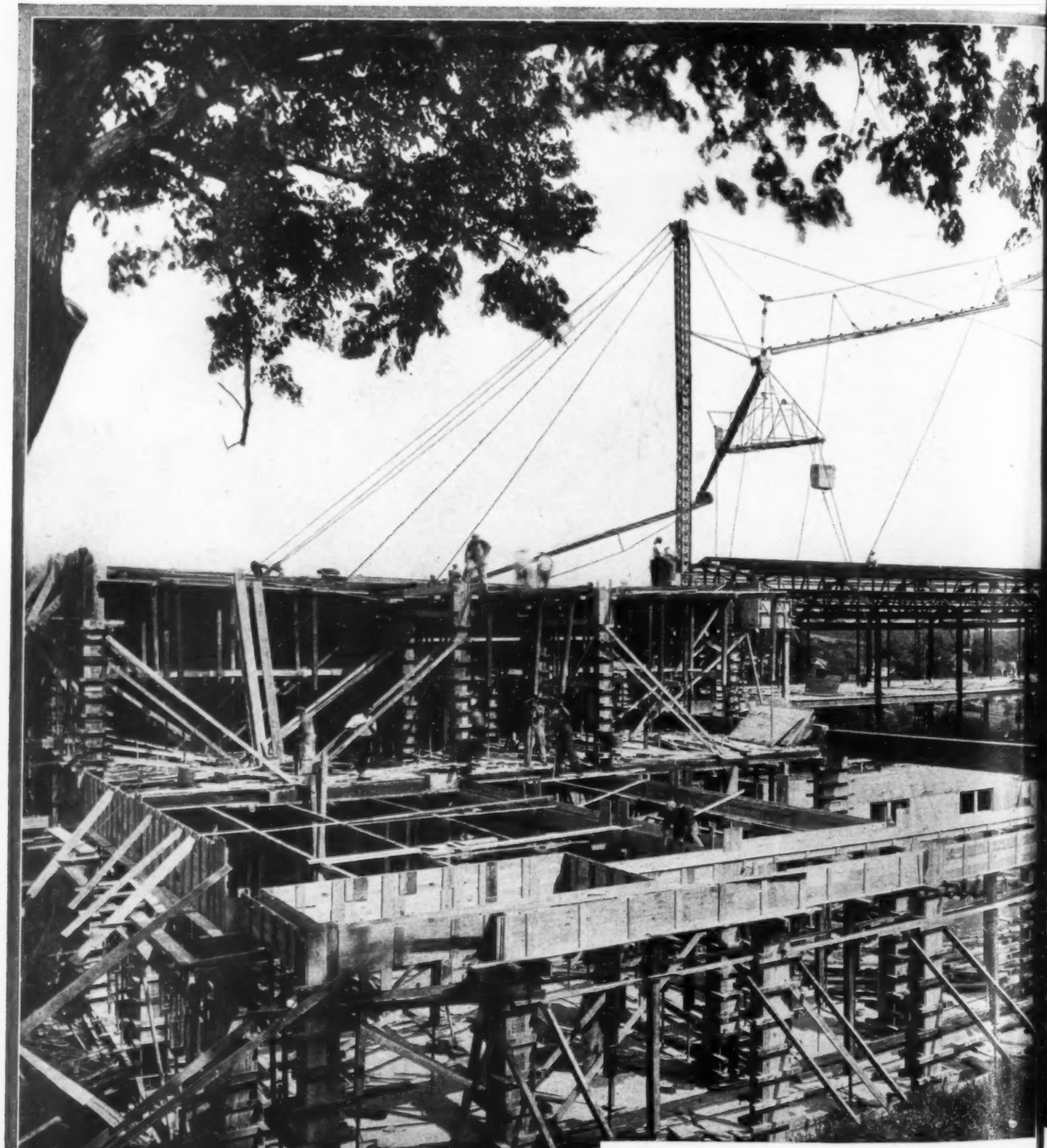
A COMPACT concrete plant built on a barge has been used in constructing a concrete retaining wall containing more than 4,000 cu.yd. of concrete in a period of four months in the Fox River Valley at Kaukauna, Wis. The outfit is operated by the U. S. Engineering Department under the direction of Major John J. Kingman, District Engineer. Nelson W. Wightman, Junior Engineer, has been in actual charge of the work.

The photograph on the cover of this issue of *Construction Methods,* and also the photograph at the bottom of this page show the outfit at work. The plant consists of an Insley tower 60 ft. in height, with the necessary chute, a material hopper, a ½-yd. mixer and a derrick. The materials were loaded on barges and towed to the plant by a gasoline tug. The derrick transferred the aggregates from the barges to the hopper and also assisted in setting and removing the forms. These forms were built of wood in sections 50 ft. long and about 6 ft. wide, three sections being required to complete one wall section. With this outfit and a crew of about 31 men, a wall 1,117 ft. in length and averaging 20 ft. in height, was built. The floating plant handled the entire job without difficulty.

Pouring a section of retaining wall at Kaukauna

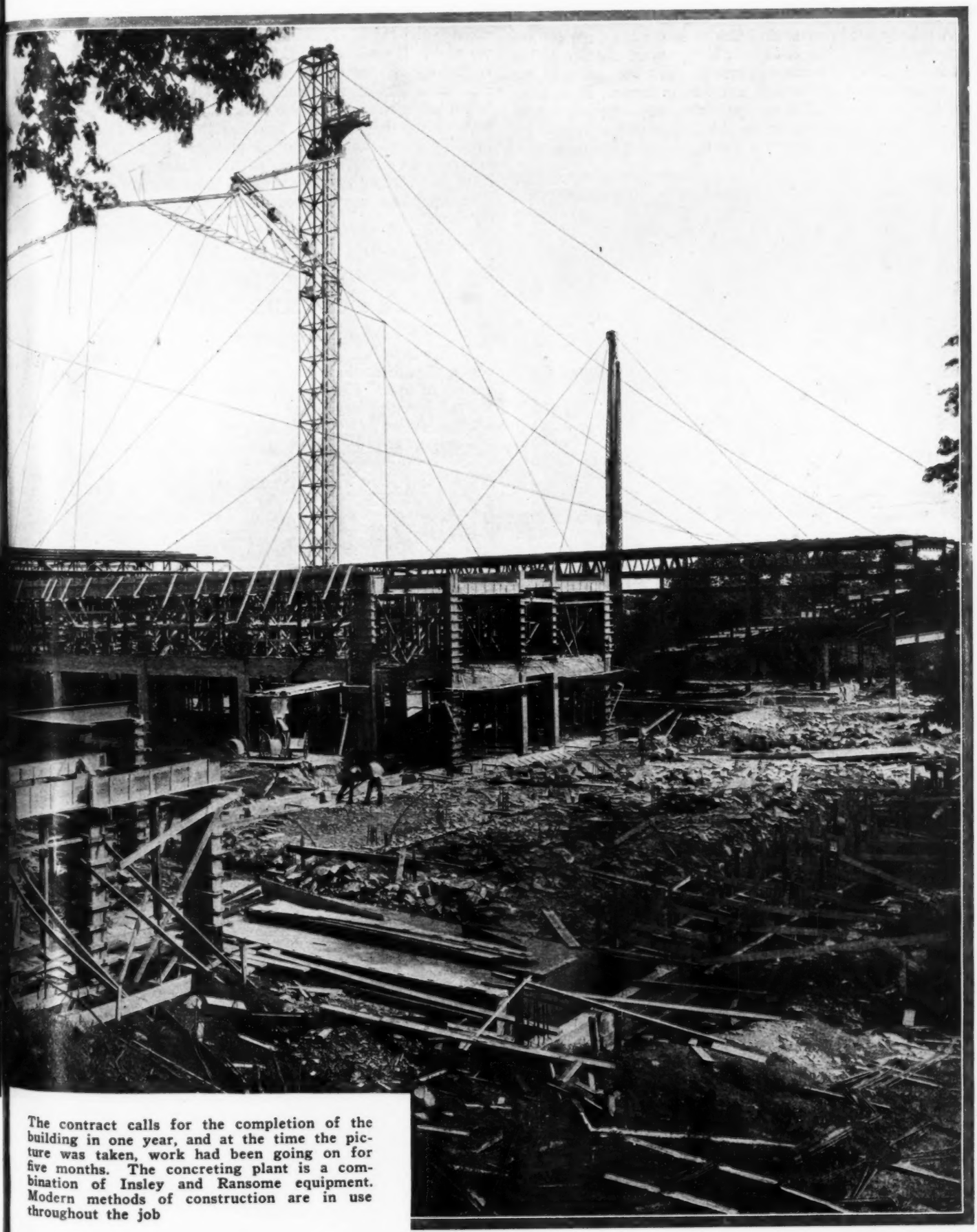


Connecticut School Provides



A new school building, which will accommodate 2,500 pupils, is being constructed in Stamford, Conn., by the E. & F. Construction Company of Bridgeport. This photograph, which was sent to *Construction Methods* by Ernest V. O'Brien, shows various phases of the work in progress simultaneously

Panorama of Construction

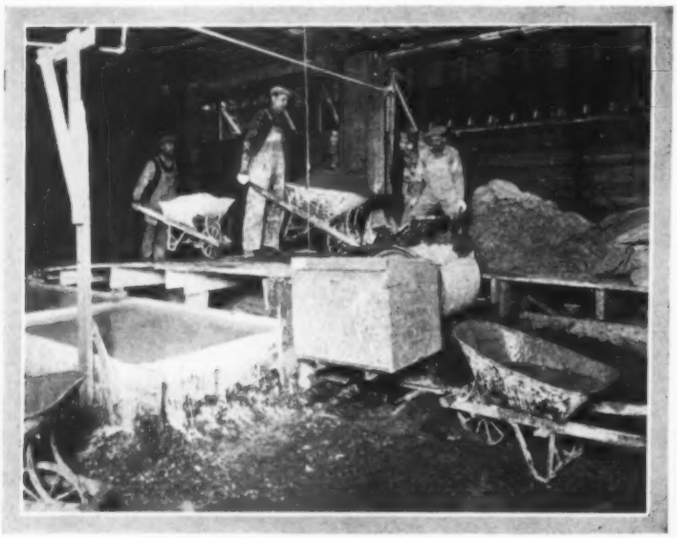


The contract calls for the completion of the building in one year, and at the time the picture was taken, work had been going on for five months. The concreting plant is a combination of Insley and Ransome equipment. Modern methods of construction are in use throughout the job

NEW EQUIPMENT ON THE JOB

An Efficient Mortar Mixer

A new type of mortar and plaster mixer has been put on the market by the Marsh-Capron Company of Chicago. This machine consists of a mixing drum supported on self-aligning trunnions carried in bearings on the main frame. Each mixing hoe is formed of three steel bars, especially shaped to give a thorough mixing action. A discharge spout, built as part of the drum, confines the batch to a narrow stream permitting discharge into wheelbarrows. A specially designed combination hopper and grill will receive a wheelbarrow load at a time.



The mixer shown in the photograph is being used on the Pittsfield Building, Chicago, by T. J. Nicholson & Co., subcontractors for tile setting.

For Use in Excavation

The Thew Shovel Company of Lorain, Ohio, has just put out a new type of trench hoe or pull shovel. This machine, which is especially useful in sewer and excavating work, is called a Back Digger. It also can be used in cellar work and other sorts of excavation. One feature of the Back Digger is the control of the dipper which can be tilted by the operator to any angle desired at any stage of the digging or dumping operations instead of spilling the dipper load through the entire arc of the digging arm. This tilting dipper makes it possible for the operator to hold his load until he has spotted his dipper exactly where wanted. The machine also does efficient work in backfilling. The dipper can be pulled to the edge of the trench in a horizontal position, pushing the dirt before it, and can then be tilted to empty the dipper into the trench. The ability to hold the dipper in any position while backfilling permits cleaning up the entire spoil pile without gouging into the solid ground beneath it. This equipment can be attached to any Lorain 75 or Lorain 60 shovel.

A Portable Saw Rig

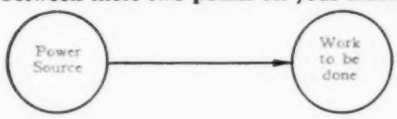
A portable saw rig, known as the Durex, is being sold by C. I. Longenecker of Milwaukee, Wis. This machine is equipped with a table which tilts and makes possible a great variety of uses. The saw travels in a straight line providing the same cutting depth for the entire length of the stroke.

Every effort has been made to protect the operator by safety devices. When ripping, the saw is continually guarded by an automatic arrangement. A crosscut guard also gives full protection to the man running the machine. Motor power for the saw rig is a 2-cylinder Le Roi gasoline engine which is mounted under the table, thus economizing in the floor space occupied. The compact design of the saw rig makes it very easy to take it from one job to another, and its independent power plant makes it possible to operate it wherever needed.

YOU KNOW

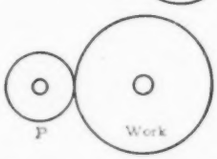
that "A straight line is the shortest distance between two points." This is an established truth.

It is equally true that the earning capacity of your excavating equipment depends upon how direct a line you can get between these two points on your machine.

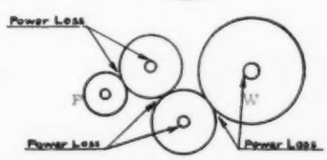


A devious route means increased power loss.

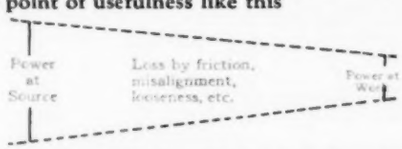
You know that this



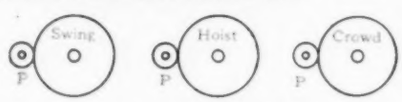
is far superior to this



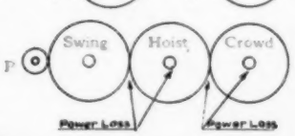
Each additional shaft, bearing or gear—each change from one kind of power to another, robs you of some of the available power of your motor—power that should be earning profits for you instead of burning itself up on the way to the point of usefulness like this



When you have three distinct kinds of work to be done by one machine as with your power shovel (swing, hoist, crowd), you know that theoretically this

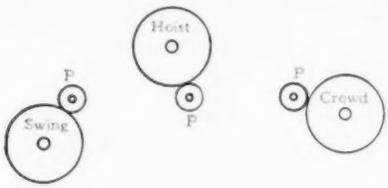


is far more efficient than this

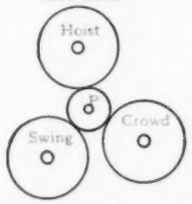


But three power plants cannot be used on one machine, without serious drawbacks, such as the multiplication of wear, care, upkeep and initial cost.

However, the same and even better results can be achieved with one power plant by combining this



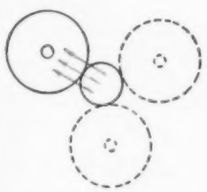
into this



which gives you an individual, "direct-to-the-point" drive, from one single power source to each motion.

No round-about path from power source to work—no long gear trains to wear, drag or get out of alignment.

Here is as near perfect balance of power as it is possible to get. Each motion is operated direct from the power pinion, equivalent to three separate power units.



But, better than 3 power units, it enables you to throw all the power (more than sufficient to operate all motions simultaneously) into any one motion if desired, thus,

That is why this symbol,

used in Thew advertising means so much to you. It represents the Thew driving principle, the very acme of simplicity and power concentration.

It means a greater percentage of power delivered where it is needed.

It means fewer parts to wear, lubricate and watch.

It permits the use of larger, more rugged parts without increase in weight.

All of which, summed up, means the straightest line between these two points also,

Remember that THEW and Thew ONLY has the Center Drive.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW

$6 to $8 per day cheaper than gasoline

MORE POWER — LOWER FUEL COST — MORE YARDAGE

The new Bucyrus D-2 Diesel Shovel has the Bucyrus high speed digging cycle—faster than other makes of 1-yard shovels.

Plus: more years of service—low maintenance cost—and the Bucyrus high-speed digging cycle

Its 20% to 40% *surplus* power provides the smooth operation that lengthens cable life and preserves the main machinery.

As a result, it digs bigger yardages per day with lower costs per yard.

And the Bucyrus-Atlas Diesel Engine saves an additional $6 to $8 per day in fuel costs. It actually uses less fuel than a gasoline machine and the cost per gallon of Diesel fuel is far lower than gasoline.

In addition, Bucyrus construction assures big yardages at low costs for many, many years to come.

The new D-2 Diesel Bulletin tells you all about the fast hoist and fast swing—the bigger yardages they produce—and the new low cost Diesel power. If you're interested in moving more dirt with fewer dollars send for the bulletin D-21-2 today.

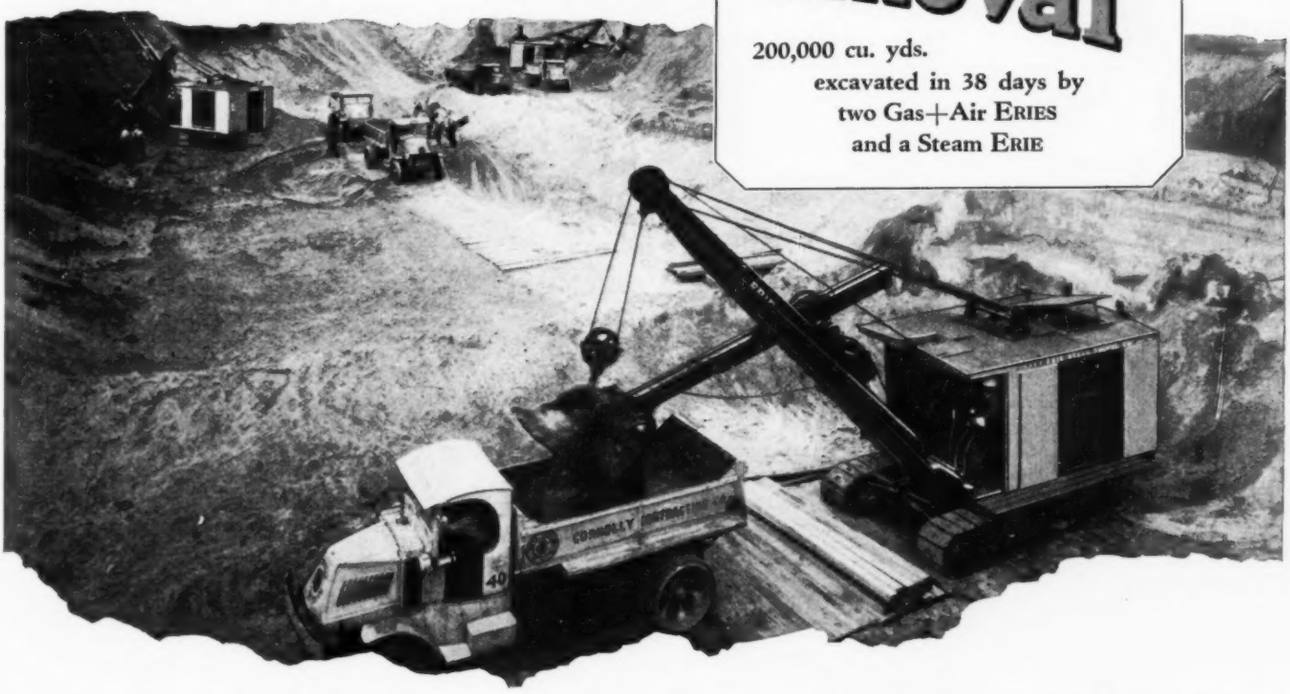
BUCYRUS COMPANY, South Milwaukee, Wisconsin

BUCYRUS

NEW YORK CHICAGO BIRMINGHAM SAN FRANCISCO PITTSBURGH TOKYO LONDON

The Twin Cities' record for earth removal

200,000 cu. yds.
excavated in 38 days by
two Gas+Air ERIES
and a Steam ERIE



"We have found the ERIE always ready to work, with very little upkeep," wrote Connolly Contracting Co., St. Paul, Minn.—and then Mr. Connolly

bought another Gas+Air ERIE

Here's
BIG OUTPUT—

"Each of the Gas+Air ERIES *averaged* 1,500 cu. yds. per shift. One of these shovels loaded as high as 46 five-yard trucks in an hour."

Too fast? Of course it is—but the Gas+Air ERIE can work *smoothly* at such high speeds. No reversing friction clutches taking hold with a jolt and letting go with a jerk—the crowding and swinging engines are always in gear. *And every start and stop is cushioned by air.*

Much better control for accurate cutting, too. It's positive.

The confidence of this successful contractor in his Gas+Air ERIES was justified many times over by their performance on the excavation for the Sears-Roebuck Minneapolis plant, now being built.

38 days, from start to finish, to excavate 200,000 cu. yds. Two of the three ERIES worked 24 hours a day, one 12 hours—

Without any trouble, or delays whatever during the entire job, in spite of the fact that the work went at a pace no shovel manufacturer would care to recommend.

Often the three machines were getting out a combined output of more than 400 cu. yds. an hour.

When you have an emergency, the Gas+Air ERIE rises to it! We have never seen any other shovel that can even class with it for Big Production.

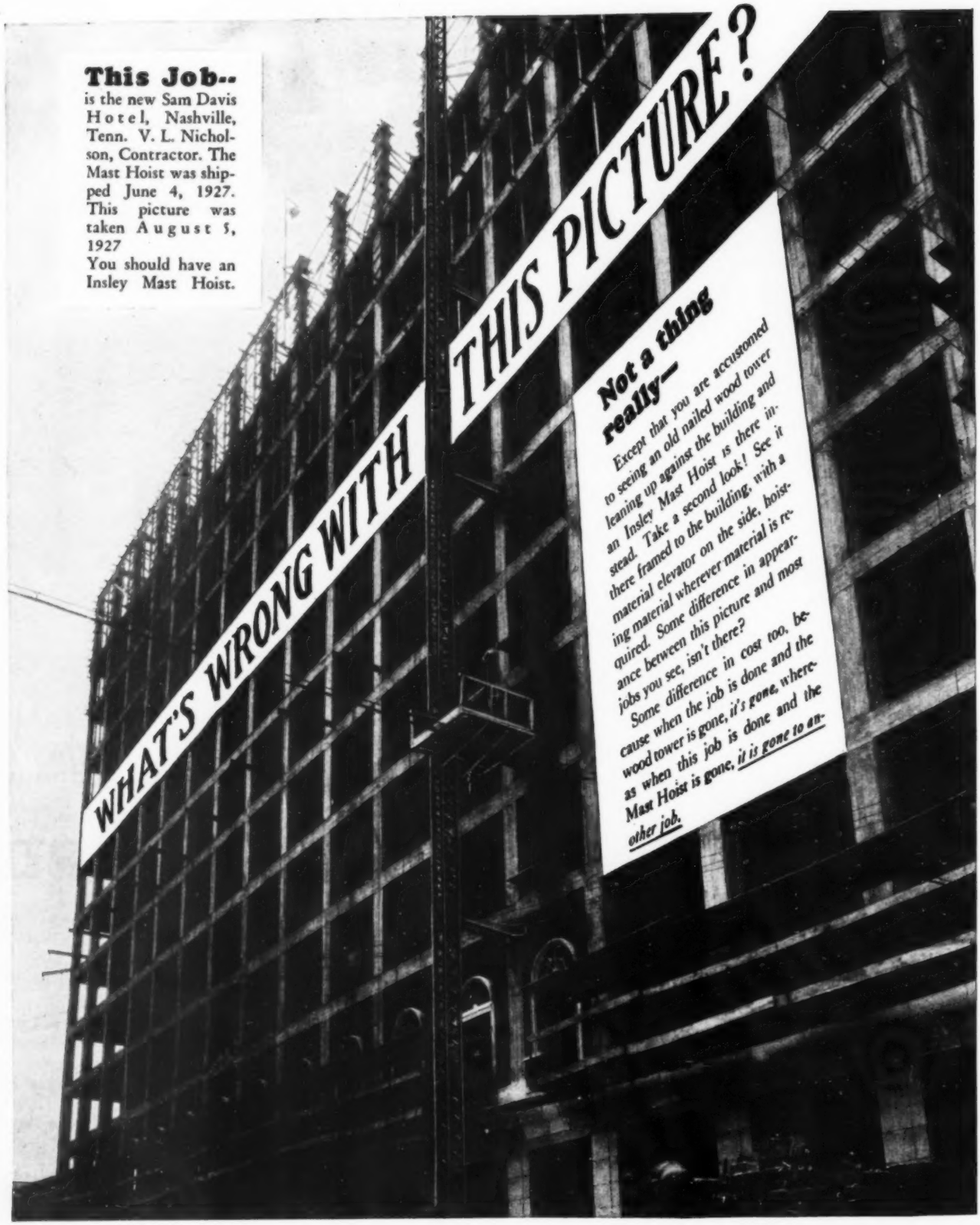
The Repeat Orders for Gas+Air ERIES tell the story.

ERIE STEAM SHOVEL CO., Erie, Pa., U. S. A.

Branch Offices: Boston, New York, Philadelphia, Atlanta, Pittsburgh, Buffalo, Detroit, Chicago
Representatives throughout the U. S. A.

GAS+AIR ERIE and Steam DREADNAUGHT

SHOVELS, CRANES, DRAGLINES, ETC.


This Job--
is the new Sam Davis Hotel, Nashville, Tenn. V. L. Nicholson, Contractor. The Mast Hoist was shipped June 4, 1927. This picture was taken August 5, 1927
You should have an Insley Mast Hoist.
WHAT'S WRONG WITH THIS PICTURE?
Not a thing really—
Except that you are accustomed to seeing an old nailed wood tower leaning up against the building and there framed to the building, with a material elevator on the side, hoisting material wherever material is required. Some difference in appearance between this picture and most jobs you see, isn't there?
Some difference in cost too, because when the job is done and the wood tower is gone, it's gone, where as when this job is done and the Mast Hoist is gone, it is gone to another job.

538

INSLEY MANUFACTURING COMPANY · Indianapolis

Engineers and Manufacturers

TRADE-MARK

Patent Flattened Strand

"HERCULES" RED-STRAND

REG. U.S. PAT. OFF.

WIRE ROPE

Offers You Better Results

Present day material handling equipment demands wire rope of great strength and endurance.

The Patent Flattened Strand "HERCULES" (Red-Strand) Wire Rope is better able to meet the demands for the following practical reasons:

Strength: **Size for size, and grade for grade, it is the strongest wire rope made, because the shape of the strands enables them to fit snugly together, thereby permitting the use of more metal.**

Resistance to Crushing: **On account of the small hemp core and the keystone shape of the strands, the Patent Flattened Strand construction offers maximum resistance to crushing. Each strand acts like a keystone in an arch.**

Resistance to Wear: **Patent Flattened Strand Wire Rope is so made that the outer wires conform to a circle, so instead of only one wire in each strand being exposed to frictional wear there are two or more, depending upon the type of construction. This distribution of wear insures longer service and greater safety.**

The use of the Patent Flattened Strand construction is not an experiment, as it was developed in Europe over 35 years ago. We obtained the American rights in 1894. It is now in service the world over.

We particularly recommend Patent Flattened Strand "HERCULES" (Red-Strand) Wire Rope for use on heavy duty cranes, clamshell buckets, dredges, excavators and steam shovels. We shall be glad to have you write for further particulars.

Made Only By **A. Leschen & Sons Rope Co.** Established 1857

5909 Kennerly Avenue
ST. LOUIS

New York Chicago Denver San Francisco

Trailer Bins

Sectional Bins

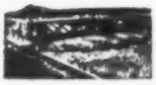
Agrabatchers

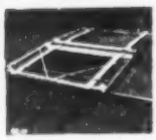
Road Forms

Curb and Gutter

Sidewalk Forms

Joint Machines


Finishing Machines


Traveling Bridges

Car Unloaders

Mixing Boxes

Tool Boxes

TRAILER BINS
35, 55, 80, 110 Tons
Special Bins
All Sizes

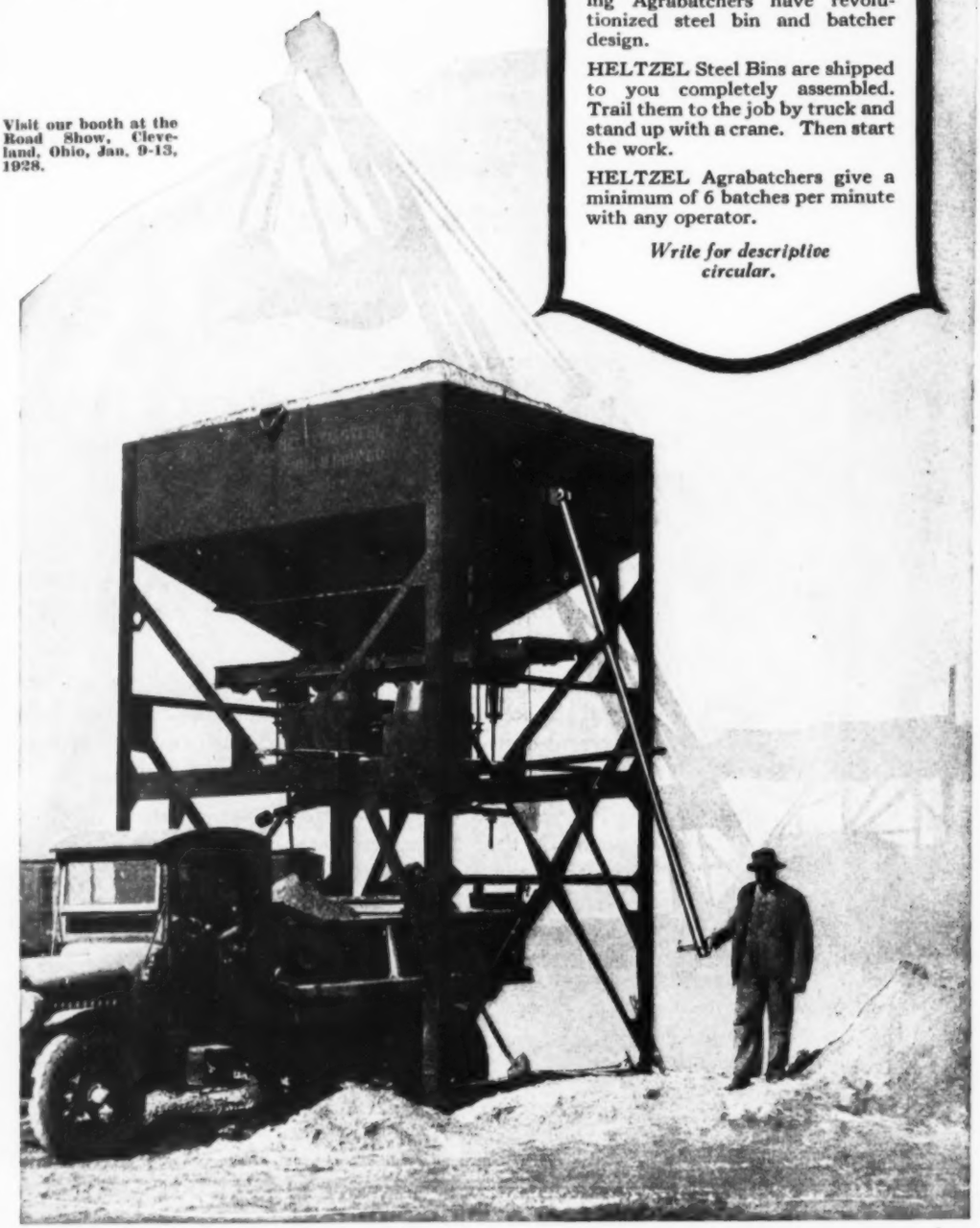
Visit our booth at the Road Show, Cleveland, Ohio, Jan. 9-13, 1928.

THERE is no question but what HELTZEL Steel Trailer Bins and HELTZEL Automatic Weighing and Measuring Agrabatchers have revolutionized steel bin and batcher design.

HELTZEL Steel Bins are shipped to you completely assembled. Trail them to the job by truck and stand up with a crane. Then start the work.

HELTZEL Agrabatchers give a minimum of 6 batches per minute with any operator.

Write for descriptive circular.



THE HELTZEL STEEL FORM & IRON CO. - - WARREN, OHIO

HELTZEL

NO OTHER SMALL SHOVEL EVER BUILT LIKE THIS

LOOK at the Northwest ¾ and ½ cu. yd. machines. Never before was there a small shovel, crane or dragline built like this. Here is a unit that means years of service.

The bases are annealed steel castings, free from the troubles of structural members. The swinging pinion fits into ten splines cut from the solid shaft, eliminating forever the troubles of loosening keys, yet it can be removed without disturbing any other part of the machine. The center pin is a high carbon steel forging bored from the solid and double heat treated. The propelling shafts are protected from all sidewise or twisting strains. The reversing shafts are of nickel chromium steel, double heat treated and ground to size. Gears are of alloy steel, case hardened, with cut teeth. The drums are annealed steel castings and when worn may be removed without disturbing the rest of the assembly.

These are samples of the quality of design and construction prevailing throughout Northwest machines.

Check them against any other machine on the market.

NORTHWEST ENGINEERING CO.

The world's largest exclusive builders of gasoline, electric and Diesel powered shovels, cranes and draglines

1723 Steger Bldg., 28 E. Jackson Blvd.
Chicago, Ill., U. S. A.

NORTHWEST ½ yd ¾ yd

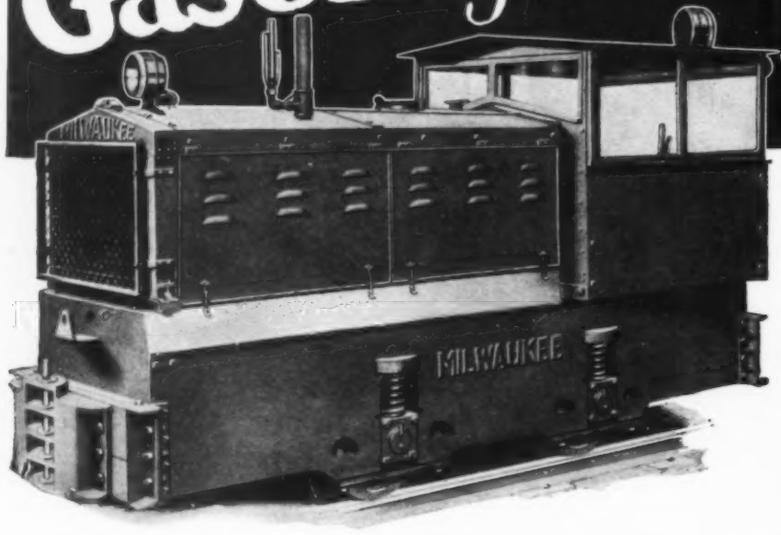
CRANES SHOVELS **CONVERTIBLE** and DRAG

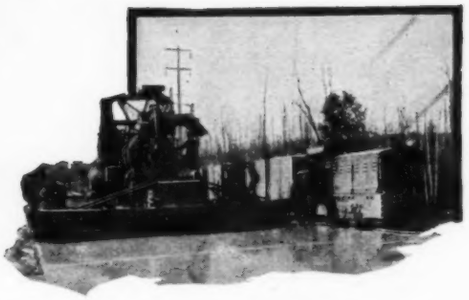
Gasoline-Diesel-Electric

CM11-Gray

NORTH WEST

The Product of Gasoline Locomotive Pioneers





THE Milwaukee Locomotive Mfg. Co. built the first gasoline locomotive in 1907 and has been building locomotives ever since.

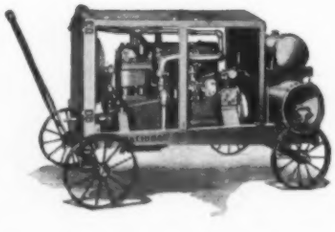
A constantly growing, wide-spread demand for Milwaukee Gasoline Locomotives during the past two decades is a tribute not only to the inherent soundness of this type of track haulage equipment, but is definite recognition of the basic *quality* of this particular line of locomotives. Experience and reliability count for something in building gasoline locomotives, just as they do in any other line of specialized endeavor.

Whether your haulage problem is one of delivering aggregate to paving mixers on big road jobs, hauling materials around a big manufacturing plant, or any one of many jobs, there is a Milwaukee Gasoline Locomotive ideally suited to your requirements.

Milwaukee Gasoline Locomotives are built in all sizes, for any gauge track.

MILWAUKEE LOCOMOTIVE MFG. CO.
Subsidiary of National Brake & Electric Co.
MILWAUKEE, WISCONSIN

MILWAUKEE *Gasoline* Locomotives



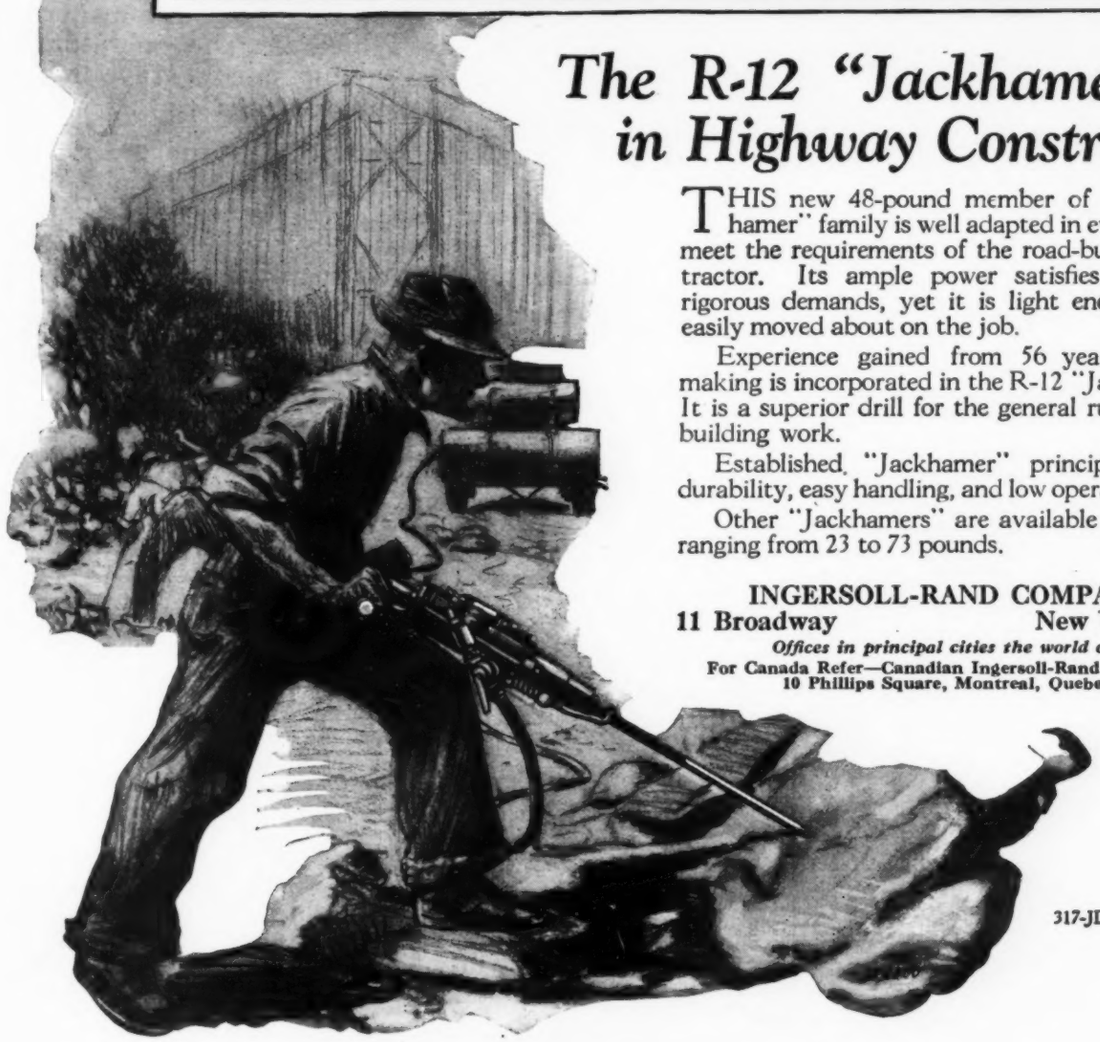
Get acquainted with National Air Compressors — the latest and greatest improvement made in gasoline engine driven portable units — the climax of thirty-one years' designing and engineering development. Engine and Compressor are a compact unit mounted on one crankcase and operated by one crankshaft.

SIZES: 110, 160, 240 and 330 Cubic Feet, standard mountings.

NATIONAL BRAKE & ELECTRIC CO.
Division of Westinghouse Air Brake Co.
MILWAUKEE, WIS.

National AIR COMPRESSORS
ANOTHER WESTINGHOUSE PRODUCT

Exclusive Territorial Sales Franchises Available.



The R-12 "Jackhamer" in Highway Construction

THIS new 48-pound member of the "Jackhamer" family is well adapted in every way to meet the requirements of the road-building contractor. Its ample power satisfies the most rigorous demands, yet it is light enough to be easily moved about on the job.

Experience gained from 56 years of drill-making is incorporated in the R-12 "Jackhamer." It is a superior drill for the general run of road-building work.

Established "Jackhamer" principles insure durability, easy handling, and low operating costs.

Other "Jackhamers" are available in weights ranging from 23 to 73 pounds.

INGERSOLL-RAND COMPANY
11 Broadway New York City
Offices in principal cities the world over
For Canada Refer—Canadian Ingersoll-Rand Co., Ltd.
10 Phillips Square, Montreal, Quebec

317-JD

Ingersoll-Rand

Easy Operation
A Foote Characteristic ..

THERE are no extra levers hidden around in odd corners of the Multi-Foote Paver. They are all out in the open, banked in two groups on the operator's platform, one for mixing, one for travelling, easily seen and easily reached.

Only *five* levers control all the ordinary operations of mixing, moving and placing concrete. And the levers for every auxiliary operation, the control of the engine, drum clutch, high and low traction, are within arm's reach of the operator when he needs them—he has the whole MultiFoote at his finger tips and can overlap operations and secure the fastest possible mixing cycle.

It's one year ahead.

The Foote Company, Inc.
of Nunda, N. Y.

World's largest exclusive builders of road pavers

MULTI FOOTE
The Paver with Timken Bearings

Frank E. Hall
152 West 42nd Street, New York, N. Y.

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E. J. McHarg & Company
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MultiFoote Sales Company
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Burton Franklin
Volunteer Building, Chattanooga, Tenn.

Edward R. Bacon Company
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CM-11Gray

MARION

Even the Rock of Gibraltar won't stall the engine on the ONE YARD TYPE 7 Gas-Electric—

OF course, the Type 7 won't move it either — but the engine which generates the electric power on the shovel — will keep on pulling — IT CAN'T BE STALLED. The hoist motor has the characteristics of the steam engine—high speeds for the light loads and low speeds for the heavy loads — a flexibility so essential to low maintenance costs, and smoother operation. It is the only gas driven shovel in the world with no troublesome clutches or other mechanical connection between the gas engine and the hoisting machinery. And, in addition, there are separate motors for direct driving of both the swinging and crowding motions. Get the whole story of this popular machine in Bulletin 319. Mail the coupon today.

THE MARION STEAM SHOVEL COMPANY
MARION, OHIO, U. S. A.

27026

THE MARION STEAM SHOVEL CO., Marion, Ohio, U. S. A.
Without cost or obligation, please send a copy of Bulletin 319 to

Write in this space the nature of your work

Name _____

Address _____

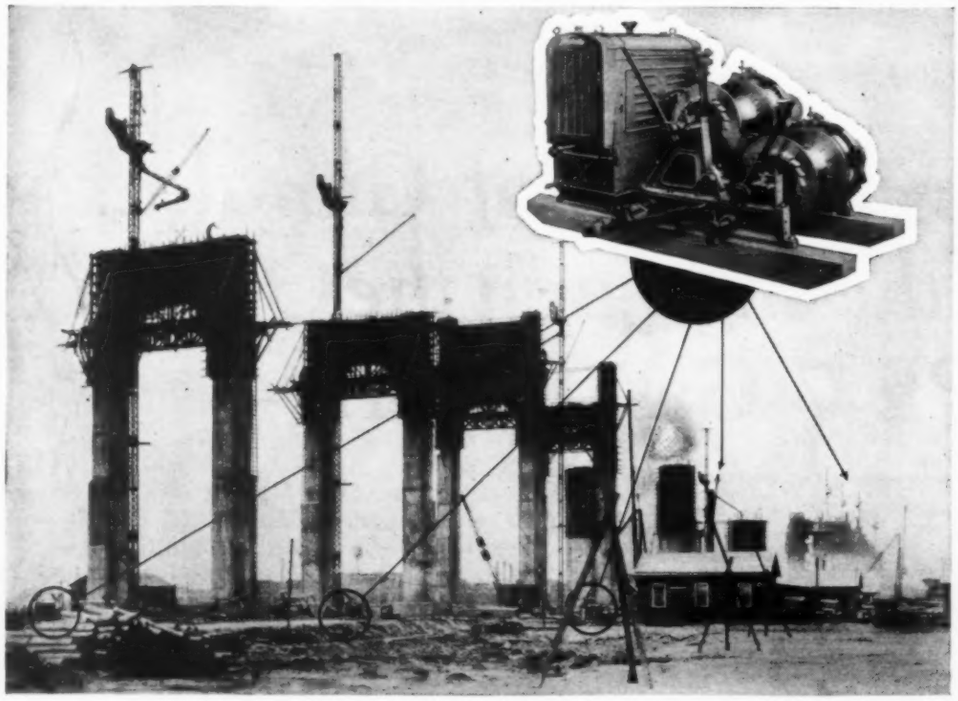
CLYDE

HOISTS CLYDE DERRICKS

The Triest Contracting Corporation and the Frederick Snare Corporation of New York City built the approaches to the Staten Island bridge spanning the Arthur Kill between Staten Island and New Jersey.

A Clyde 35 H. P. double drum gas hoist operated an Insley tower on each pier. Both contracting firms were highly pleased with the performance of their Clydes. The illustration below shows the work in construction and the location of the Clyde units. Complete data about any type of Clyde hoisting equipment furnished gladly on request.

You'll Take Pride In Your Clyde!



CLYDE IRON WORKS SALES CO.

DISTRIBUTORS FOR CLYDE IRON WORKS DULUTH, MINNESOTA

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CLYDE TWO MARKS OF GUARANTEED QUALITY

FOR SUCCESSFUL PERFORMANCE A·G·C·of·A·

UNIVERSAL

UNIVERSAL

Will You Get Through This Year?

You'll make the biggest profits on your 1927 jobs by finishing them this year—right on schedule—won't you?

But no man has a contract for good weather. Are sudden, heavy Fall rains, that turn the ground into a "sea of mud," and thaws, snows, etc., going to mean costly delays and waiting until next spring to finish.

If they do, your profits are going to be smaller or even entirely wiped out.

Finish your jobs this year with a UNIVERSAL CRANE, truck mounted, and equipped with the Motor Truck Crawler. Here is a regular "Mud Hog"—a high speed crawler, that travels at truck speeds through mud and muck—up and down banks—through ditches and depressions—through mud and sink holes—over logs and underbrush. Here is a Money Making Crane on a speedy mobile mounting that, Rain or Shine, always keeps on the "go" and keeps your jobs moving, with profits coming in—Winter, Summer, Spring and Fall.

Send for Bul. 444. It describes this attachment in detail.

The Universal Crane Co.

907 Swetland Bldg., Cleveland, Ohio

"Sole Licensee for Truck Crane Mountings."

Dirt Cheap

TAKING dirt from the wrong place and putting it in the right place is the contractors' business.... It is the business of the "Caterpillar" Tractor to do the work *better, quicker, cheaper.*

There is a "Caterpillar" Dealer near you.

Prices

2-TON . . $1850
Peoria, Illinois
THIRTY . $3000
Peoria or San Leandro
SIXTY . . $5000
Peoria or San Leandro

CATERPILLAR TRACTOR CO.
Executive Offices: San Leandro, California, U. S. A.
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New York Office: 50 Church Street
Successor to
BEST — C. L. Best Tractor Co. — The Holt Manufacturing Company — HOLT

STURDY STRONG!

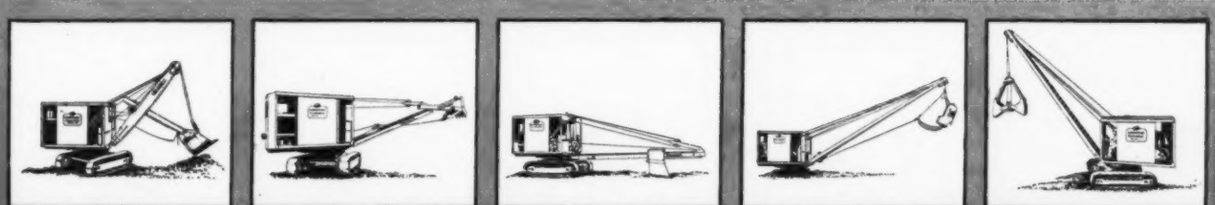
The General

FULL REVOLVING

"more features built-in than any other"

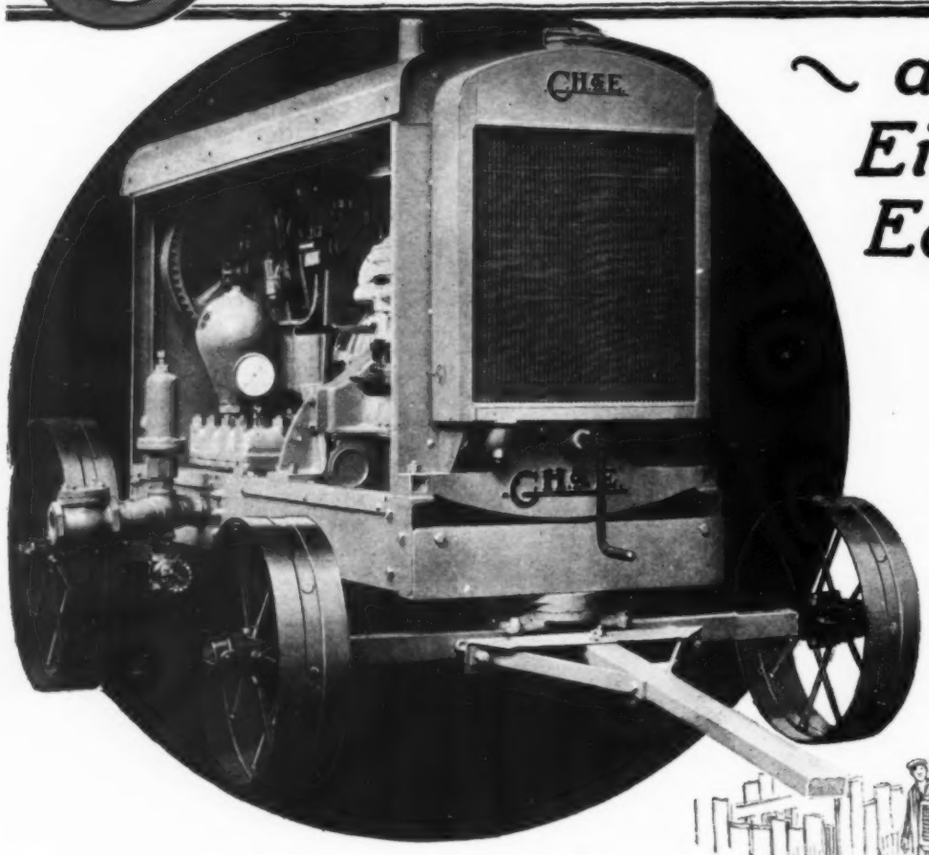
It digs and does all things expected at a lower cost

THE GENERAL EXCAVATOR COMPANY
MARION, OHIO, U. S. A.

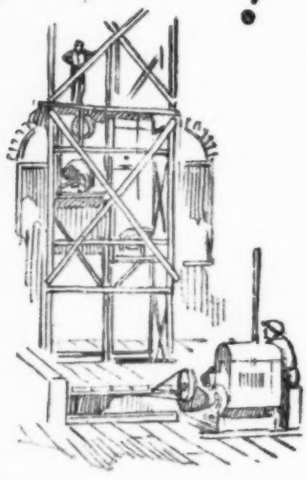


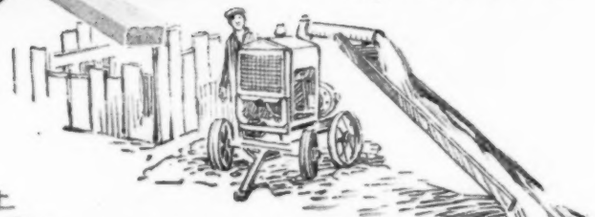
Here is the General's Staff

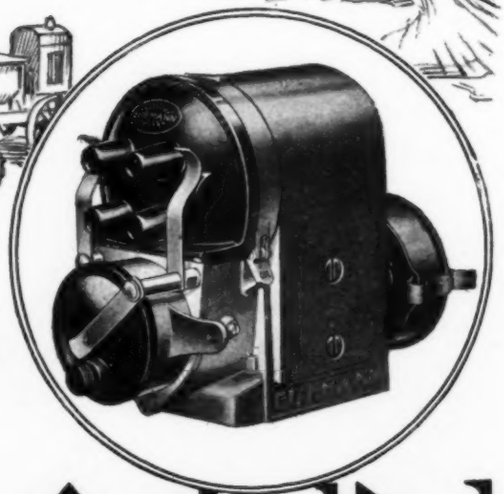
C.H.&E. PUMPS, HOISTS MIXERS & SAW RIGS



~ are Eisemann Equipped!







THIS latest addition to the C. H. & E. line—the new Triplex Pump is equipped with a magneto about which there is nothing of mystery, nothing unknown.

It is the same identical magneto that has been used for years on all other C. H. & E. products.

A magneto of sterling quality . . . a magneto with a record of field performance back of it . . . a magneto that has proved its reliability. And a magneto acceptable to the trade.

EISEMANN MAGNETO CORPORATION
165 Broadway, New York
DETROIT SAN FRANCISCO CHICAGO

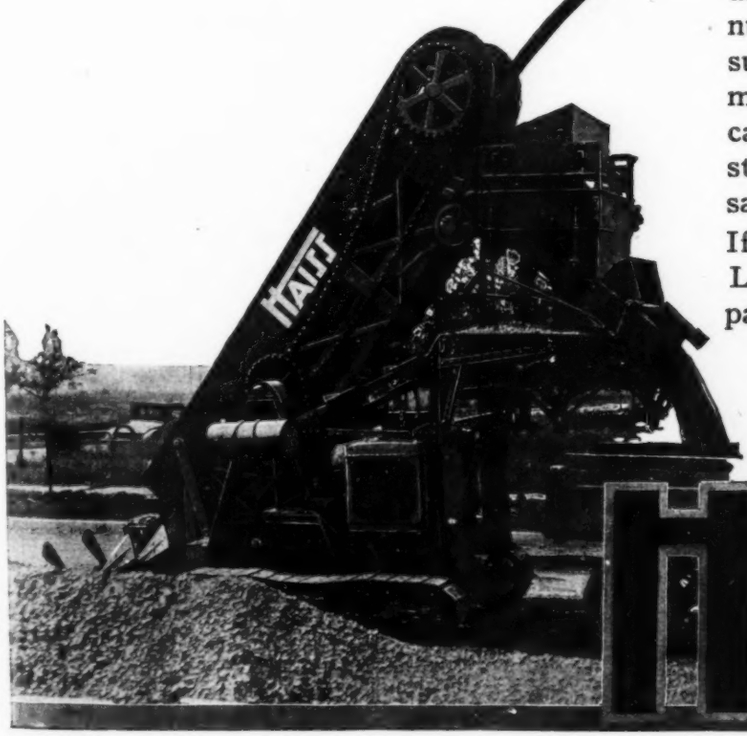
EISEMANN

EISEMANN
ELECTRICAL EQUIPMENT

The HAISS Loader's

Precision Measuring Hopper is in a class by itself

AND what's more, it's the fastest measuring hopper on the market today. With a complete cycle in 37 seconds, including stone loading, strike-off, discharge and reset operation, there can be no question about speed in batching aggregates from advance storage stockpiles.



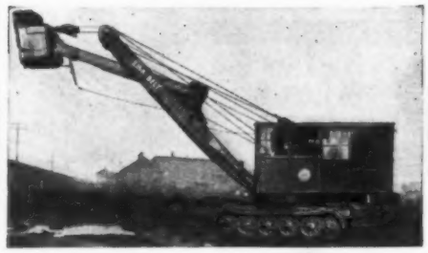
Note also that the hopper is telescopic and that by simply "setting-up" the nuts on the long threaded bolts, which suspend the telescopic extension, a micrometer adjustment is had for any capacity from 16 to 26 cubic feet for stone and from 8 to 16 cubic feet for sand.

If you have trucks enough a Haiss Loader will batch aggregates for two pavers.

Why not have us send you Catalog 527 with its description of the equipment and compara.ive figures on operatng costs

GEORGE HAISS
MANUFACTURING CO., INC.
139th Street & Rider Avenue, New York

HAISS



You Can Measure Performance And If You Do—

You'll Buy a Link-Belt Shovel

PERFORMANCE is one thing that can be measured accurately. Any Link-Belt Shovel user will be glad to help you, for they know how profitable it is to own and operate these sturdy machines, that have lowered the cost of handling material—that have speeded up work—that have made operators satisfied with their work—that have kept trucks busier—that are always on the job. The performance of the Link-Belt Shovel has earned an enviable nation-wide acceptance by those who handle material.

To own and operate a Shovel—built and backed by Link-Belt—is to know the real reason yourself. Send for Catalog No. 895.

3153

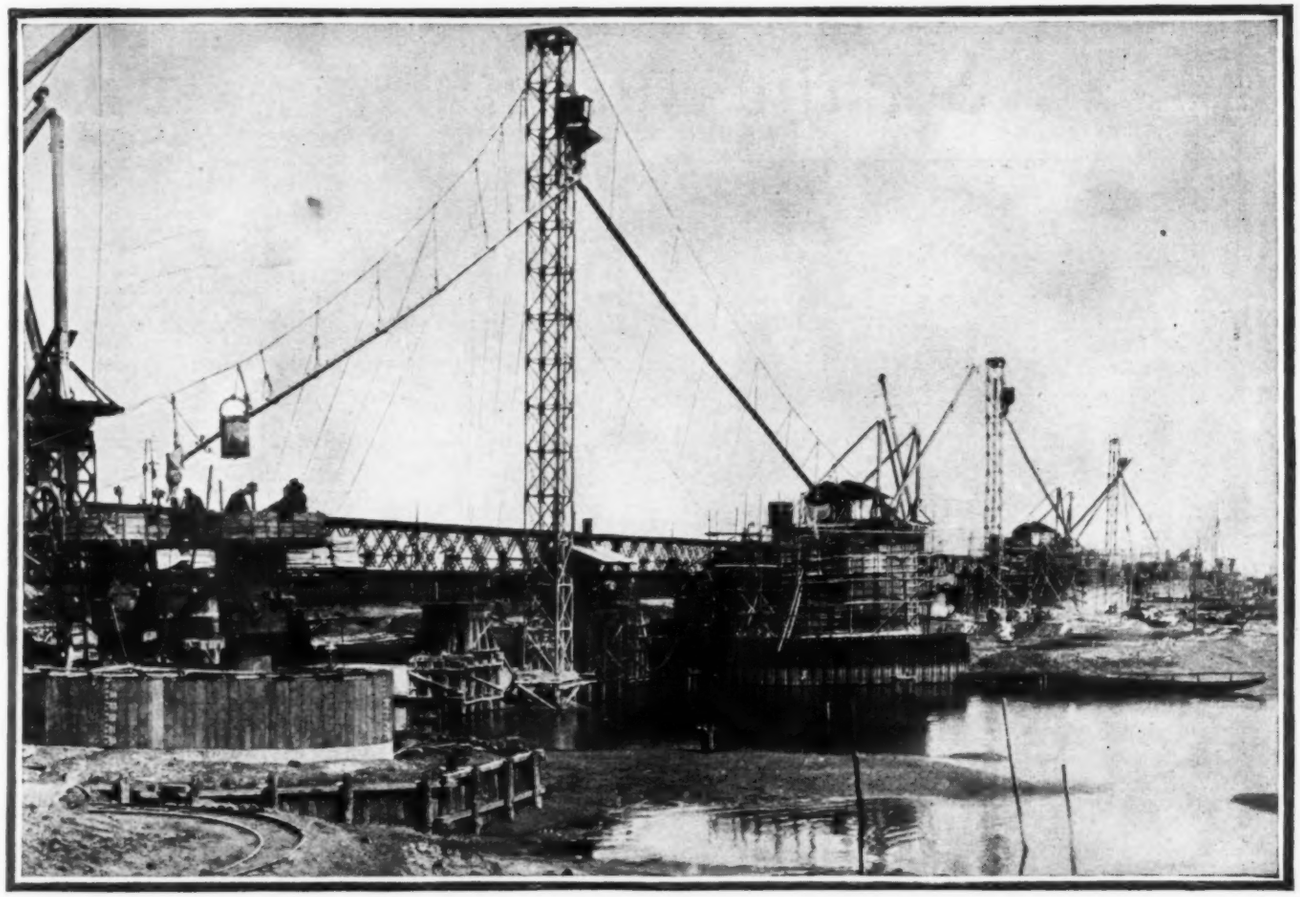
LINK-BELT COMPANY

Leading manufacturers of Elevating, Conveying, and Power Transmission Machinery

CHICAGO, 300 W. Pershing Road — Offices in Principal Cities

LINK-BELT SHOVEL

Visit Our Booth at the Road Show, Cleveland, Ohio—Jan. 9-13, 1928.



Serving *the* Foundation Company *in* Japan

On almost every Foundation Company job here and in remote corners of the globe you will find Lakewood Concrete Mixing and Placing Equipment.

There are reasons, of course, for their selection of Lakewood Equipment.

The rugged construction of Lakewood Mixers,—the ease with which the Lakewood Tower is erected and dismantled—the greater capacity and longer life of Lakewood Arch Band Chute—these are but a few of the reasons.

Other "Reasons Why" in Bulletin 23-S
Ask for a Copy

THE LAKEWOOD ENGINEERING COMPANY

Export Office
30 Church St., New York City

Paving & Construction Equipment
Cleveland, Ohio

Cable Address
Brosites

BOY! See the dust fly

Cleveland C6 Paving Breaker on A Street Railway Job.

Also

Hammer Drills, Augerjacks, Tripod Drills, Backfill Tampers, Clay Diggers, Accessories.

And dust flying from under a Cleveland C6 Paving Breaker means something!

It means five men and C6's will do as much work in a day as fifty men breaking pavement by hand.

It means doing more work at a cost saving of 50% over hand methods.

It means less fatigue for the operator and greater efficiency on any job.

For breaking up pavements, hard roads, frozen ground, for cutting manholes, enlarging trenches or for any other similar work the Cleveland C6 has no peer.

For particulars about this or any of our other cost and labor saving tools, address—

The Cleveland Rock Drill Co.

3734 E. 78th St. **Cleveland, Ohio**

Branches and Service Stations in All Principal Cities.

SAFETY IN UNDERPINNING

Is assured by use of

Watson-Stillman Independent Pump Hydraulic Jacks

Accurate—Dependable—Easy to Repair

These Jacks are being used extensively by Underpinning and Foundation Contractors for underpinning work, sinking piles under foundations and making tests of footings.

The pump, being independent can be operated at a safe distance from the load and in a convenient position. For forcing and pressing work, it can be used in connection with your own framework. For extra heavy work, several jacks may be used with one pump or from an accumulator.

We make a full line of other types of jacks, and also many hydraulic devices suitable to the contractor's needs, such as benders, shears, pumps, punches, valves, etc.

Write for catalogs.

The Watson-Stillman Co.
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New York City

Chicago, 549 W. Washington Blvd.
Philadelphia, Widener Bldg.
Cleveland, Auditorium Garage Bldg.
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Photo by courtesy of Spencer-White and Prentis.

CARBIC LIGHTS

are made in many different sizes and capacities. They insure clear white, penetrating illumination throughout the entire operating period.

THIS JOB NEEDS LIGHT!

HOW ABOUT YOURS?

Write for Catalog

CARBIC MANUFACTURING CO.

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Main Office

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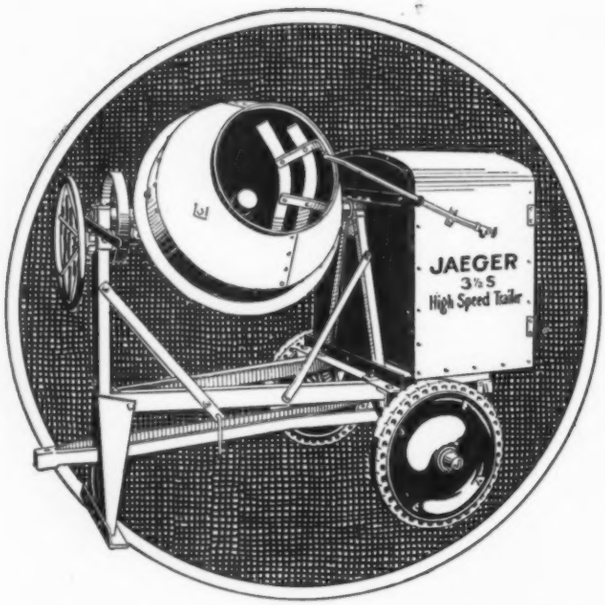
STOCKS IN OVER 75 CITIES

CARBIC CAKES

are used in all carbic lights. They are the most economical, reliable and time-saving means of producing powerful light for portable uses. No fuss, no muss, no waste.



A Genuine Jaeger Costs Less to Own

The Genuine Jaeger costs you less than most of the imitations. It costs less to operate because of its patented features like famous Flat Spot Drum with Thoro "Re" mix action—Fast Semi-Automatic Dump—"Skip Shaker" used on Loaders vibrate load out of skip without pounding—Accurate Measure Water Tank. Outfits that stand up under heavy continuous pouring without troublesome breakdowns. Why be satisfied with anything less than the original Jaeger Mixer?

A Trailer With Springs—Roller Bearings and Real Cushion Tires

Built for Fast Hauls Over Bad Roads

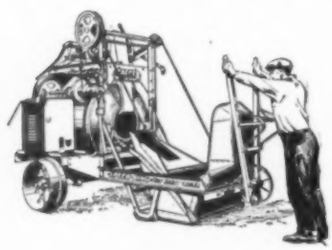
Write for Catalog. Trailers run from $166 up, with Engine.

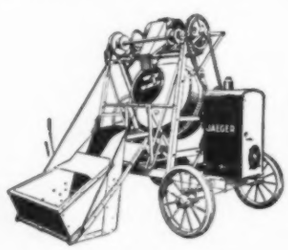
NON TILTERS

7-10-14-21-28 foot sizes. Low Chargers or Loaders. Ask about one bag Speed King for $200 less.

TILTERS

3½-5-7-10-14 foot sizes. 36 Models—Hoist attachments — Placing Plants—Crosswise Trucks.





SEND THIS SLIP TODAY FOR NEW PRICE

THE JAEGER MACHINE CO., AD 79
800 Dublin Ave., Columbus, O. Date_____

Please send catalog, prices and terms on:

☐Non-Tilt Mixers ☐Tilting Mixers ☐Plaster Mixers

Size wanted_____

Name _____

Address _____

City _____State _____

LOWELL

REVERSIBLE RATCHET

WRENCHES

—On the Job—

LOWELL

tightening big nuts under the Hudson River

Here's a 4 ft. Lowell Wrench tightening up 2¼-in. hexagon nuts on drop forged steel bolts in the Hudson River Vehicular Tunnel.

A REAL TEST FOR ANY WRENCH

You may not have a job just like this but among the many patterns and sizes of the Lowell Reversible Ratchet Wrench, you will certainly find the tool which will give you an equal satisfaction and prove to be both convenient and time saving.

State your problems to us and let us suggest an appropriate wrench.

Put our catalog M on your desk where it will be handy for reference.

LOWELL

WRENCH CO.

54 Commercial St.,

WORCESTER, MASS., U. S. A.

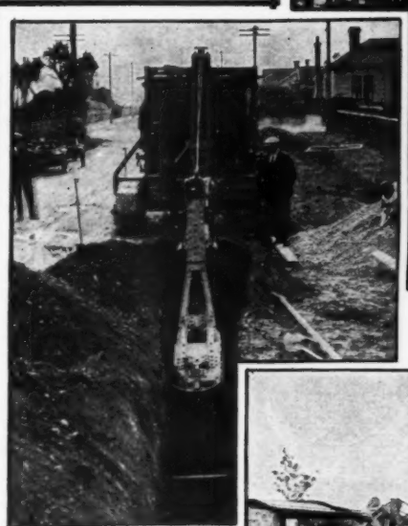
Send Today for Catalog M.

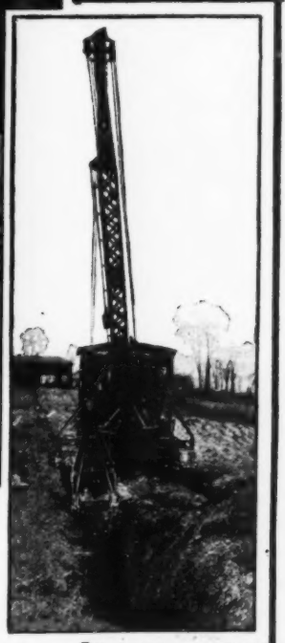
The Only Thing that's Better for a Contractor to Have than a Bear Cat is

Another Bear Cat

Above: On this big sewer job, Worth and Willoughby, Dayton, Ohio, used their two Bear Cats, one with Ditcher attachment and the other with Clamshell.

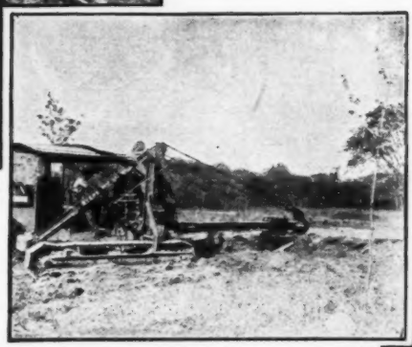
Below: This Bear Cat Ditcher dug 342 lineal feet, 4 feet deep, including 2 manholes 5 feet square, in 3¼ hours, according to Alan Moore, the owner.





Above: At Medina, Ohio, the Clemer Company finds the Bear Cat with clamshell a wonderful digger as well as material handler.

Below: As a ½-yard shovel, the Bear Cat is, we believe, without a rival in dependable, low cost performance.



At Right: Paul S. Brown, Berea, Ohio, is loading 25 to 28 wagons (1¼ yd.) per hour with this Bear Cat Skimmer on a new street grading ob.

BYERS MACHINE COMPANY, Ravenna, Ohio

Sales and Service Throughout the Country — *Builders also of Byers Truckrane*

BYERS BEAR CAT

CRANE—SHOVEL—DITCHER—SKIMMER—BACKFILLER

HALF CIRCLE OR FULL CIRCLE SWING

BYERS MACHINE CO., Ravenna, Ohio

Gentlemen:— Please send me information about the BEAR CAT. The kind of work I am interested in is.....

Name.....

Address.....

Town.....

State.....

S.M. 11-27

Easton Rollover Bodies

You'll find them in fleets where the hauling is toughest because they haul both wet or dry material and discharge it with ease. Their ability to stand abuse has been proven. Rollovers are supplied in sizes of one to four yards.

EASTON CAR & CONSTRUCTION CO., Easton, Penna.

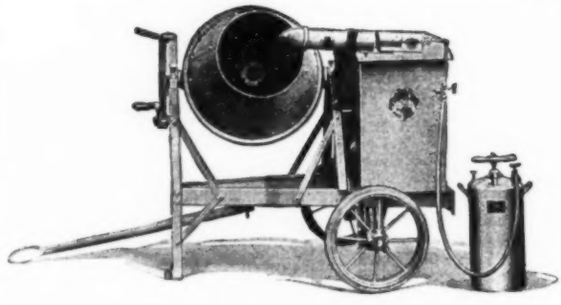
LITTLEFORD
PORTABLE
Oil Burners

Littleford Torch Burner Drying Holes In Street Before Patching

Provide at low cost an intense heat, which can be easily controlled and adjusted. Conveniently moved from place to place. Used for supplying heat for tar and asphalt melting kettles, thawing and drying holes in roads before patching, thawing frozen piles of sand, gravel, coke, coal, stone, etc., heating mortar boxes in cold weather, drying concrete for waterproofing. Two types—circular and torch. Many other uses.

Write for Bulletin C-6, which gives full details.

Summer Efficiency for Winter Concrete Mixing!



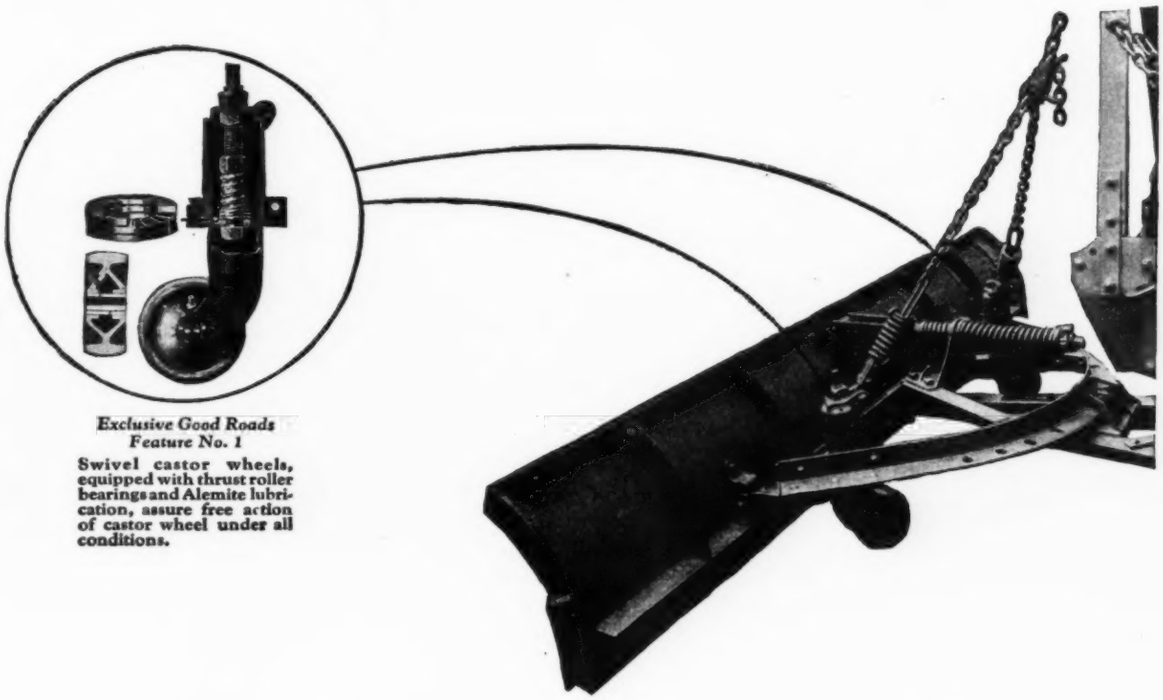
LITTLEFORD
Concrete Heaters

for tilting and non-tilting mixers make concrete mixing easy and convenient in freezing weather. Mix can be discharged at 75° temperature in zero weather. No additional labor required, as same man operates mixer and heater. All ready to attach. Burns kerosene. Simple valve adjustment controls heat under all conditions.

Just tell us the kind of mixer you are using and capacity and we will be glad to quote and send our descriptive Bulletin C-13.

LITTLEFORD BROS. *465 East Pearl Street*
CINCINNATI, OHIO

Snow Removal Costs Less Per Mile



Exclusive Good Roads Feature No. 1

Swivel castor wheels, equipped with thrust roller bearings and Alemite lubrication, assure free action of castor wheel under all conditions.

with Good Roads SNOW PLOWS

Send now for the latest Good Roads Champion Snow Plow catalog.

When you purchase a Good Roads Snow Plow you buy more than just a piece of equipment for removal of snow. You buy years of experience in the manufacture of snow plows. You buy the best in design and construction. You buy a reputation that must be sustained. You buy what three out of four buy when they order snow plows.

That's why snow removal costs less with Good Roads Snow Plows.

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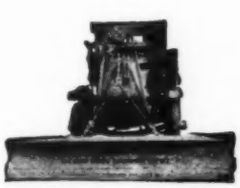
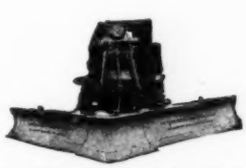
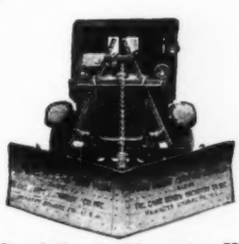


Good Roads Champion Blade Type for motor trucks—model 11-B heavy. Same plow as 10-C only heavier.

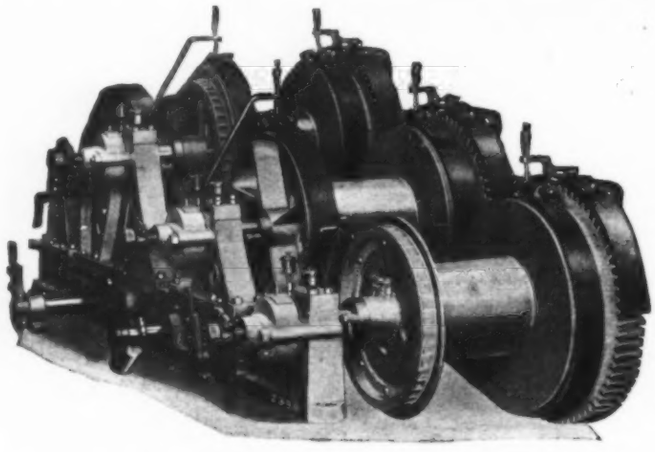


Good Roads Champion High Speed. Adjustable with V-type. Model 21-B for motor trucks. Clears a 14-foot sweep at 20 miles an hour.



Good Roads Champion V-type for motor trucks—model 20.

Good Roads SNOW PLOWS



Lidgerwood Electric Hoist for handling coal, sand, gravel, crushed stone, etc., using grab buckets.

They have power and strength in every part, that insures full capacity of entire outfit.

LIDGERWOOD

ELECTRIC - GASOLINE
STEAM - BELT
HOISTS

Every Size and Style Used for Contractors Work

You pay for a poor hoist every day you use it. A good hoist pays you a profit

LIDGERWOODS ARE PROFIT MAKERS

HOISTS - DERRICKS
CABLEWAYS

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96 Liberty Street, New York, N. Y.

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LIDGERWOOD PACIFIC CO., Tacoma, Seattle, Portland, Ore.

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INDEPENDENT

A curved line of 84-inch INDEPENDENT Reinforced Concrete Sewer Pipe, laid deep in shale rock at Clawson, Mich.

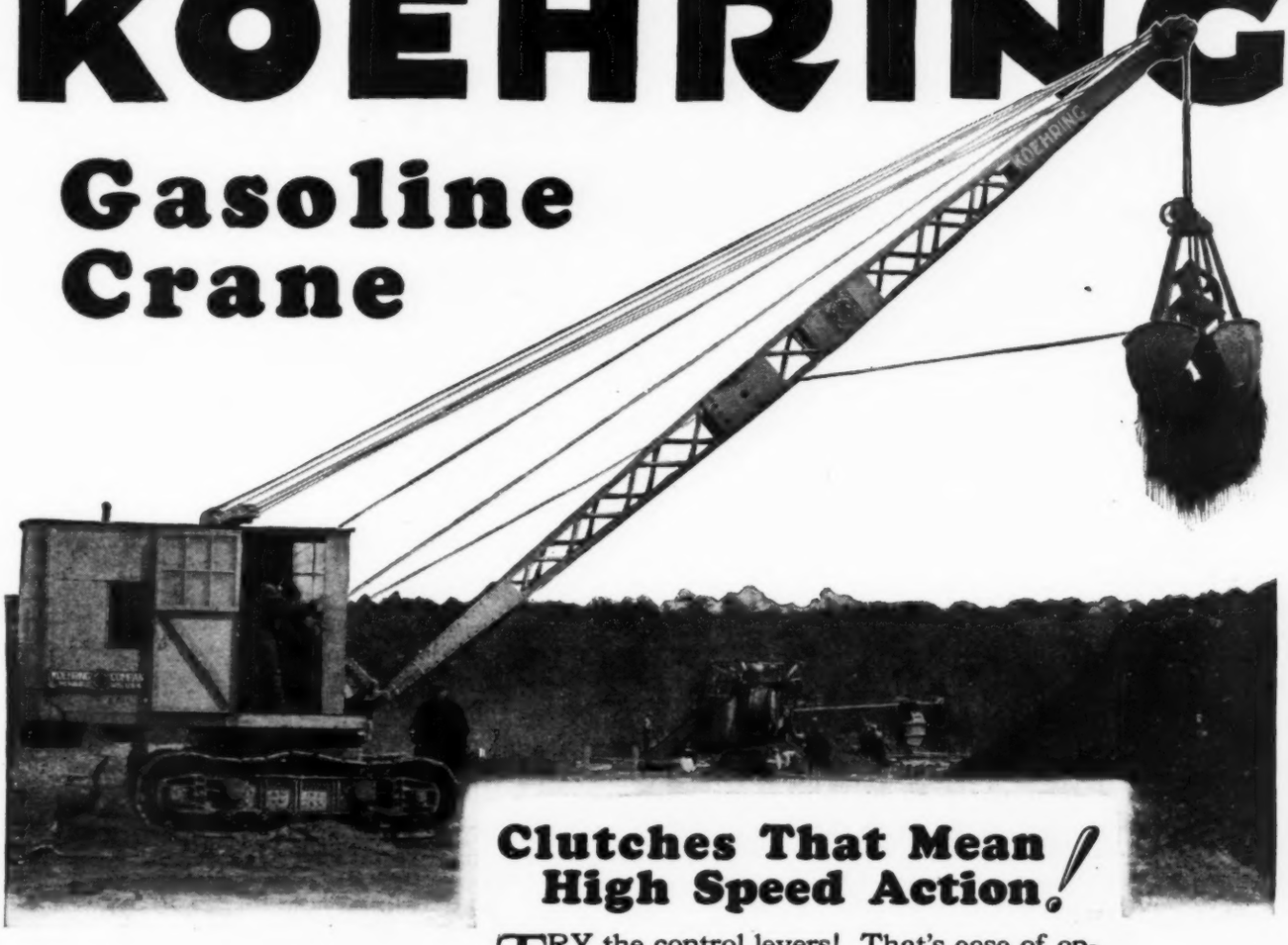
Reinforced Concrete Sewer Pipe

Installed quicker, and at lower cost
No delays—the pipe are built locally
Delivered along the trench, ready to lay
Easier to seal the "recessed" joints
Provides free and maximum flow
Endures for centuries of service
No upkeep or maintenance expense
Diameters range from 24 in. to 108 in.
Engineers everywhere endorse it—and
Numberous cities use it extensively
Telegraph or write us for quotations.

INDEPENDENT CONCRETE PIPE CO.
209 N. West St., Indianapolis, Ind.
Sales Agencies in Principal Cities

KOEHRING

Gasoline Crane



Clutches That Mean High Speed Action!

TRY the control levers! That's ease of operation! That's actual FINGER-TIP EASE OF CONTROL! That's another reason for alert, responsive, high speed operation of the Koehring!

Secured how? Not by mechanical complications to help shift clutches that should be easy shifting in the first place, but secured by clutches of great contact area — Koehring, self-equalizing, double outside-band friction clutches. *Finger-tip control and no loss of the feel of the load!* That means speed and accuracy of operation with orange-peel or clamshell, magnet, pile-driver or any equipment!

For *speed* — the Koehring! And for *Heavy Duty Construction* that means long service life — the Koehring! *Know* the Koehring!

Know the Koehring!

To know the design and construction of the Koehring is to know the way to greater value in a crane—greater profits in crane operation. Send for Crane Bulletin Cr. 17

Crane Capacities

Based on 66⅔% of Overturning Load

Quickly convertible to shovel or dragline.

No. 301—10 Tons at 12' Radius. When used with clamshell bucket loaded with dry sand or gravel:

1 Yd. Bucket (weighing empty 3,450 lbs.) at 28' Radius, 40' Boom;
¾ Yd. Bucket (weighing empty 2,600 lbs.) at 34' Radius, 45' Boom;
½ Yd. Bucket (weighing empty 2,050 lbs.) at 41' Radius, 50' Boom.

Wisconsin four cylinder gasoline engine, 5¼" x 6½", 1,000 R. P. M.

No. 501—17 Tons at 12' Radius. When used with clamshell bucket loaded with dry sand or gravel:

1½ Yd. Bucket (weighing empty 4,800 lbs.) at 31' Radius, 45' Boom;
1¼ Yd. Bucket (weighing empty 3,950 lbs.) at 36' Radius, 45' Boom;
1 Yd. bucket (weighing empty 3,500 lbs.) at 41' Radius, 50' Boom;
¾ Yd. Bucket (weighing empty 2,800 lbs.) at 48' Radius, 55' Boom.

Wisconsin four cylinder gasoline engine, 6" x 7", 925 R. P. M.

KOEHRING COMPANY MILWAUKEE WISCONSIN

PAVERS, MIXERS—GASOLINE SHOVELS, CRANES AND DRAGLINES

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Foreign Dept., Room 1370, 50 Church St., New York City.

Mexico, F. S. Lapum, Cinco De Mayo 21, Mexico, D. F.

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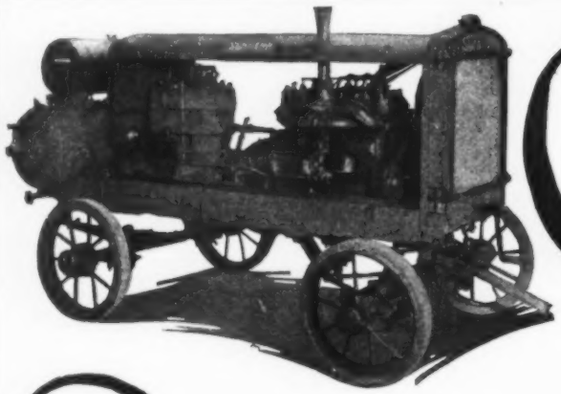


"Schramm" Multi-Cylinder Engine Driven

Compressors

We are glad to say that the Schramm compressors in the field have, without exception, given uninterrupted power under all conditions of structural and road service.

Some of the outstanding features:— Powerful "Buda" Engines coupled to large capacity Schramm Compressors. (Also made with electric motor drive.) Capacities from 60 to 240 cu. ft. Gasoline strainers to keep grit and dust out of the carburetor. Heavy duty clutch permits easy starting—cut in the compressor after the engine is "warmed up." Adapted to truck, trailer or skid mounting or for use with a tractor.

For mounting on Ford and other trucks

A card brings the Schramm Catalog. We are glad to advise you on any compressor problem. Write.

Schramm Inc., Manufacturers
West Chester, Penna.

Offices and Representatives in Principal Cities

Clip This "Ad"— It May Show You How To Lower Excavating Costs

This new booklet contains a wealth of ideas for the man who wishes to improve his methods of handling excavating work. It tells in detail how the Sauerman Slackline Cableway digs, conveys and elevates, and is operated by one man. It is full of diagrams and pictures showing how other users have lowered their excavating costs. All it will cost you is the 2c. stamp on your envelope. Just clip this "ad"— sign you name and address—and send it to us.

Name.....

Address.....

City and State.....

SAUERMAN BROS., INC.
480 So. Clinton St., Chicago

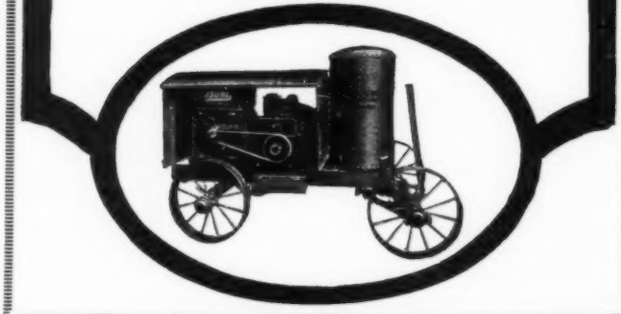
Buhl
AIR COMPRESSORS

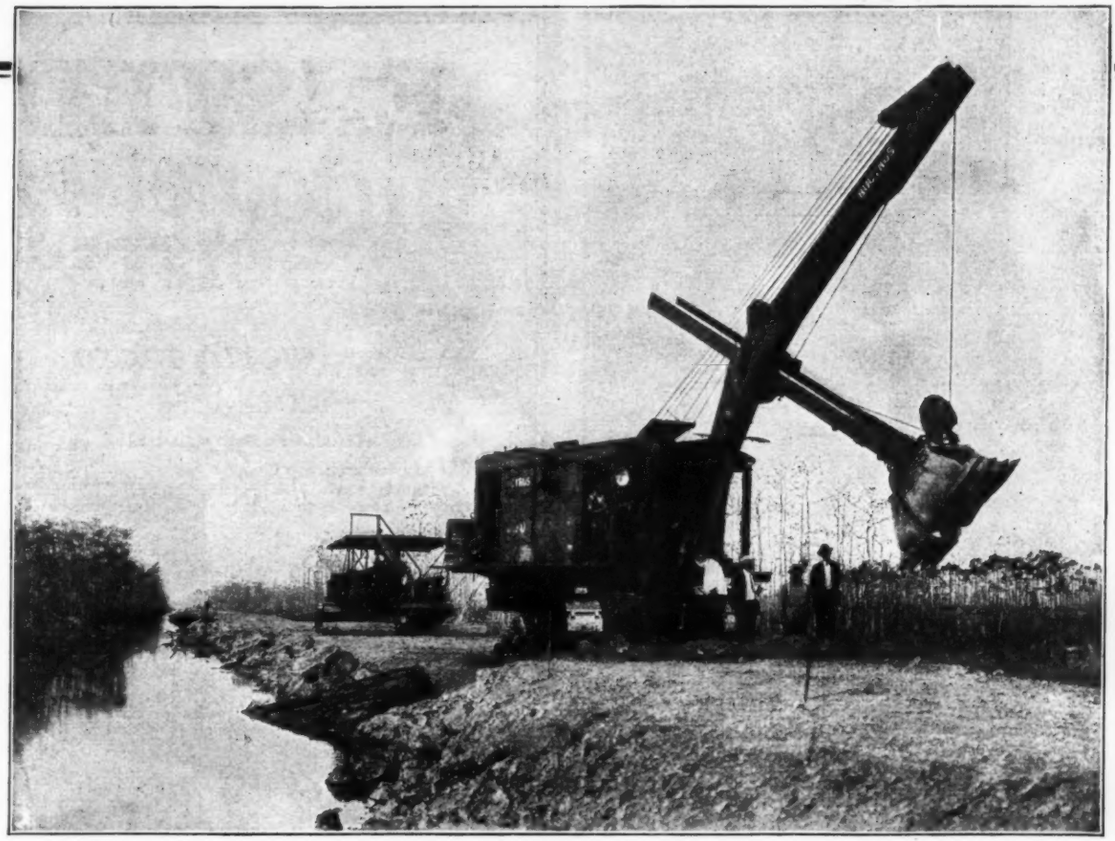
Below is illustrated the BUHL Type C Portable Compressor—one of the many different types of this popular line. Moderate in original cost and low in upkeep.

There are six sizes of portable air compressors in the BUHL line to choose from. For operating jack hammers, riveters, clay spades, concrete breakers, etc. The BUHL gives dependable air power at low cost—send for bulletins today.

Sales offices in principal cities

THE BUHL COMPANY
Manufacturers
37 W. Van Buren St., CHICAGO





BLASTING THE TAMIAMI TRAIL

THE Tamiami Trail, connecting Miami with Tampa, across the Everglades of Florida, is one of the greatest road building projects of all time. With its early completion, a nearly impossible stretch of territory will be spanned by a beautiful automobile highway.

In order to get material for the grade it was necessary to excavate a canal paralleling the right of way; and most of the excavation was through difficult rock formation. D. Graham Copeland, Chief Engineer, in charge of the work in Collier County, writes:

"Although the extremely varied texture of the rock was successfully drilled, little would be gained if the proper explosives were not available with which to shatter the rock in such a manner as to make it suitable for our purposes. More money can be wasted in a few minutes by the improper selection and use of dynamite than by any other errors in a month. To the Hercules Powder Company, we turned for assistance in this direction, and as our rock problems varied almost continuously, that Company has sent its engineers here every two months or so to keep in close touch with the work, and to offer suggestions highly advantageous to us. There are only a few firms sufficiently farsighted to knowingly decrease their sales with the idea of helping their customers. The Hercules Powder Company is one of these few firms. We have used one solid carload of sixty percent nitroglycerin dynamite monthly for the last three years and, but for the kindly suggestions and efficient cooperation of that Company, we would unquestionably have used a much greater quantity with poorer results."

* * *

Write us for a free copy of the Explosives Engineer Magazine containing an illustrated article that describes in detail this great engineering feat.

HERCULES POWDER COMPANY

(INCORPORATED)

959 King Street, Wilmington, Delaware

Dynamite—Permissible Explosives—Blasting Powder—Blasting Supplies

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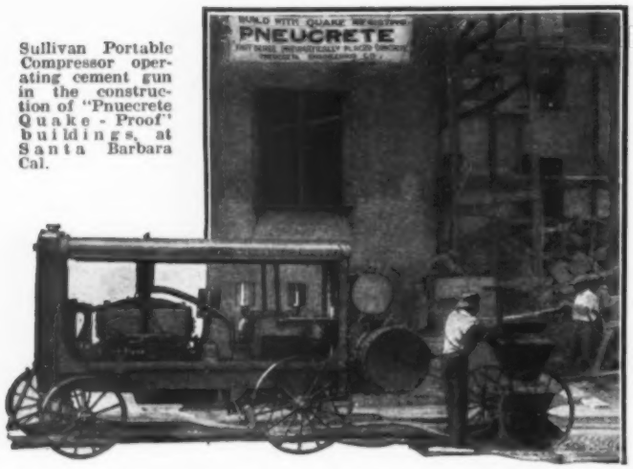


Sullivan Portable Compressor operating cement gun in the construction of "Pneucrete Quake - Proof" buildings, at Santa Barbara Cal.

Shooting Concrete With Air

Cement gun operation requires a compressor with "pep." A constant flow of air is needed, and at a pressure that will prevent clogging in the line, and pack the concrete solidly. For cement gun operation Sullivan Portable Compressors, with their vibrationless operation, are favorites.

The Pneucrete Engineering Company of Santa Barbara, Calif., uses an N-2 gun and a Sullivan 310-ft. compressor to erect "Pneucrete Quake-Proof" Buildings. A pressure of 43 lbs. is maintained, and President Cassiere says that his Sullivan Portable Compressor gives more air and a higher pressure, than any other compressor he has ever used.

The Ohio State Highway Dept. at Middletown, Ohio uses an N-1 gun and a Sullivan 220-ft. compressor to repair concrete bridges. They report the pressure never falls below 40 lbs.

Others are having similar experiences. For cement gun operation and other jobs which require sustained efficiency in a compressor, use a Sullivan. Outstanding features are freedom from vibration, "Wafer" Valves, Protectomotor Air Filters, Positive Automatic Lubrication, and Buda engines. Capacities 103 to 310 cu. ft.

Write for Catalog 7283-F.

Sullivan Machinery Company
168 S. Michigan Ave., Chicago

SULLIVAN

ERSTED

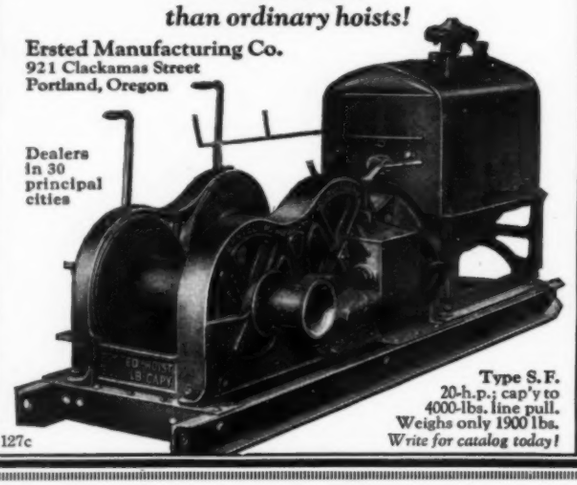
All Steel *Automotive* HOISTS

3 SPEED

—worth more
—cost less
than ordinary hoists!

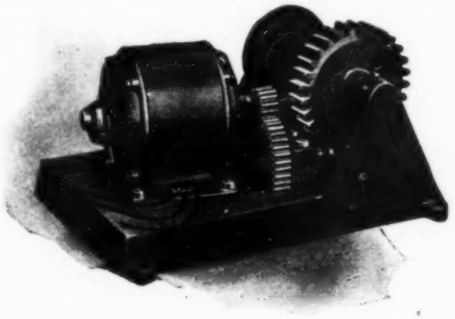
Ersted Manufacturing Co.
921 Clackamas Street
Portland, Oregon

Dealers in 30 principal cities



Type S.F.
20-h.p.; cap'y to 4000-lbs. line pull.
Weighs only 1900 lbs.
Write for catalog today!

127c



500 pounds single line pull at 25 feet per minute

The above illustration shows the Dobbie Worm Winch with a one hp. motor. Note the performance of this unit.

This is an efficient worm-geared winch where a power-driven machine is preferred to hand operation.

The motor is reversed to lower.

Further particulars gladly submitted.

Dobbie Foundry and Machine Co.
Niagara Falls, N. Y.

DOBBIE EQUIPMENT

PICK UP CARTS DERRICK FITTINGS
SULKY DERRICKS WINCHES ALL TYPES

The New Owen Rehandling Bucket

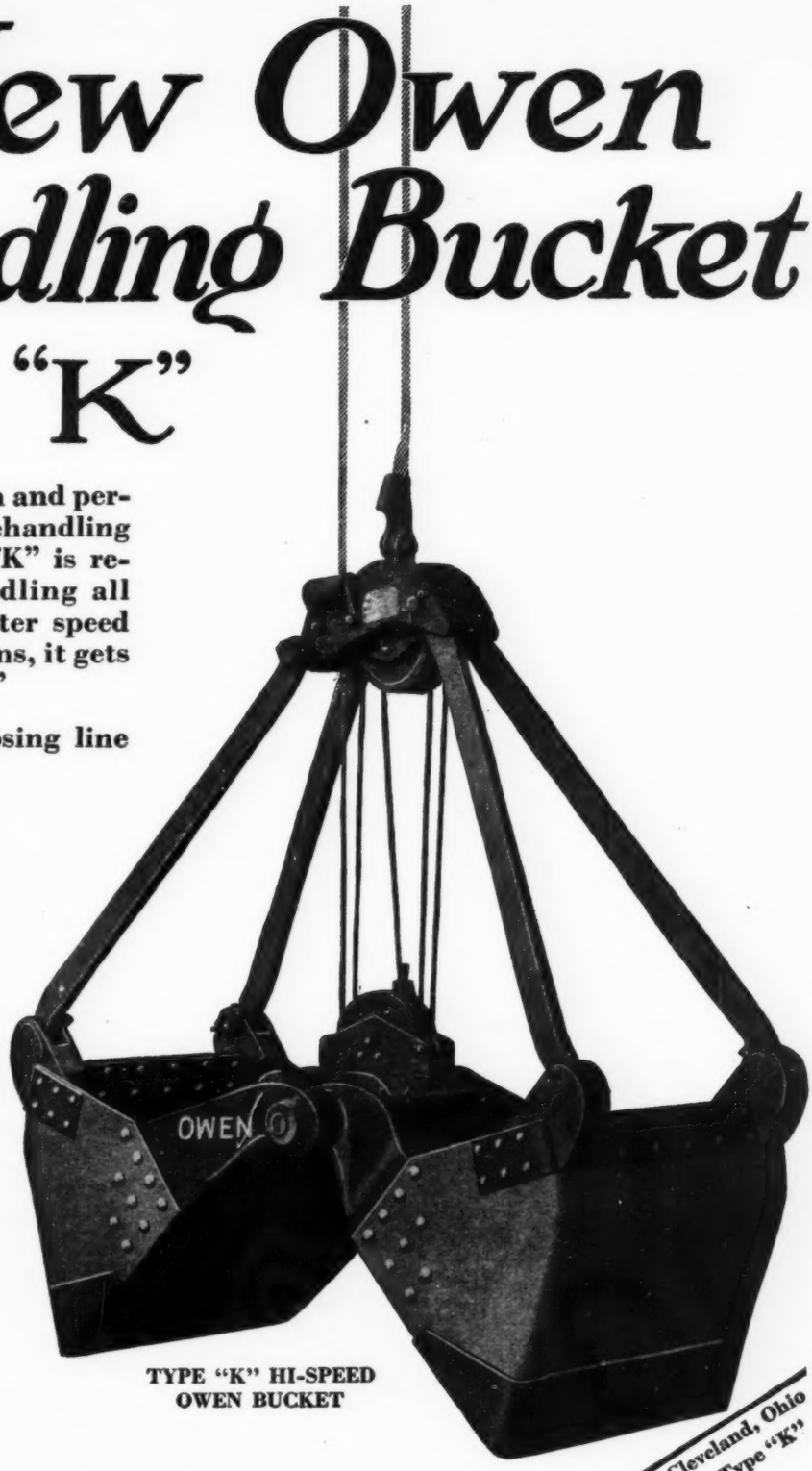
TYPE "K"

A new leader, both in design and performance, over all other rehandling buckets, the Owen Type "K" is remarkably versatile, rehandling all kinds of material with greater speed and efficiency. Like all Owens, it gets "A Mouthful at Every Bite."

Due to less parts in the closing line the opening and closing action is exceptionally fast. Sheaves and cable have exceptionally long life. Closing sheaves are mounted on main counterweight where they rarely come in contact with the material—one feature not found in any other bucket.

Lighter, but rigid and durable, this new leader comes in three models which together cover the entire field of rehandling work.

Send the coupon for the "17 Reasons" folder giving full data on these new type "K" buckets.



TYPE "K" HI-SPEED OWEN BUCKET

THE OWEN BUCKET CO.

6023 BREAKWATER AVE., CLEVELAND, O.

OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAYS WORK

Owen Buckets

The Owen Bucket Company, 6023 Breakwater Ave., Cleveland, Ohio
Please send me "17 REASONS FOLDER" on the new Type "K" Owen Bucket.
Name ... Address ... City ... State ...

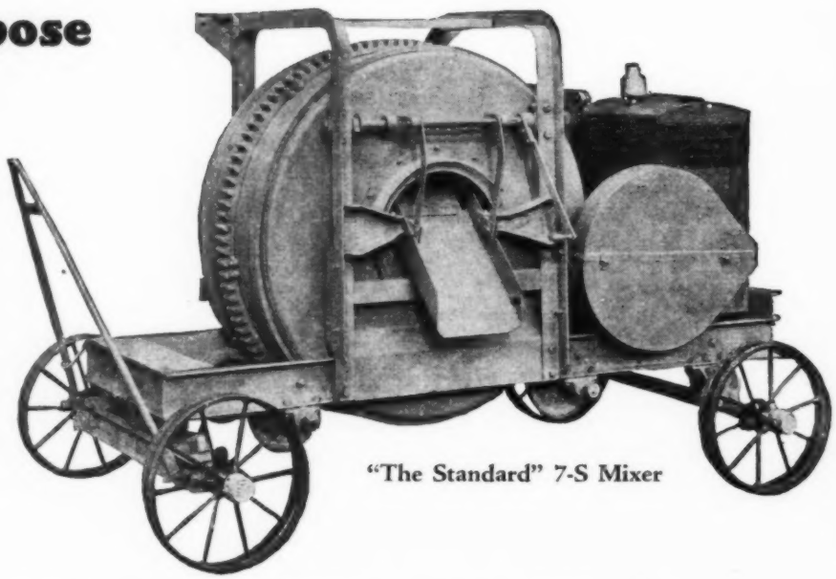
"THE STANDARD" PLASTER CONCRETE MORTAR MIXER

The All-Purpose Mixer

"The Standard" 7-S Mixer illustrated makes an ideal all-purpose mixer for the average contractor. Its design and construction have been time-tested and incorporate the advantages of light weight, all-steel strength and exclusive narrow drum mixer noted for its quick charging, thorough mixing and quick discharging action.

It will mix plaster just as efficiently and smoothly as your concrete or mortar.

Let us send the facts.



"The Standard" 7-S Mixer

The Standard Scale & Supply Corporation
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Established in 1884
Trench Excavator Division
3894 National Ave., Milwaukee, Wis.
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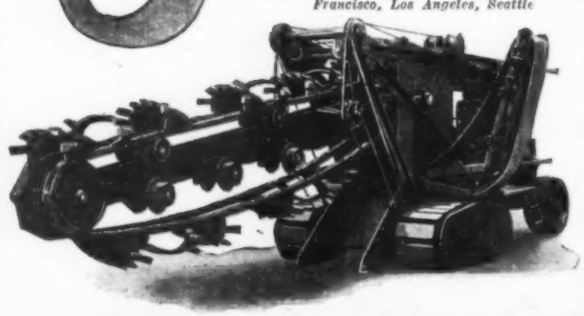

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Portable Belt Conveyors · Self Feeding Bucket Loaders
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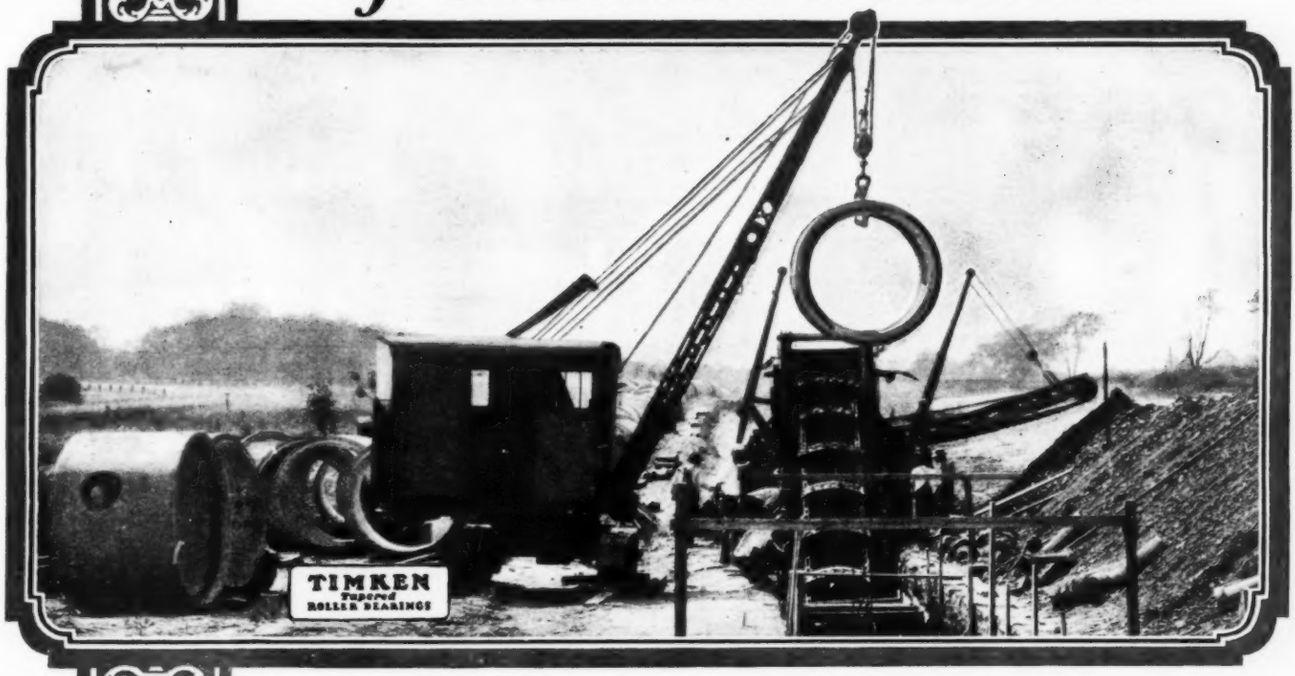

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Speedy and economical operation, rapid transportation, and diversified working ability qualify it as a truly master handler of miscellaneous construction materials. Actual service establishes the fact beyond question. Contractors after using this Crane highly endorse it.

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Re-enforced at every point to insure maximum strength, Rogers trailers transport enormous weights. Yet they are designed to save loads, roads, time and money.

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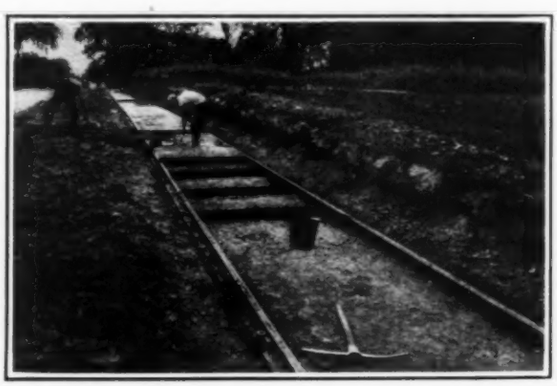
Build sidewalks with METAFORMS



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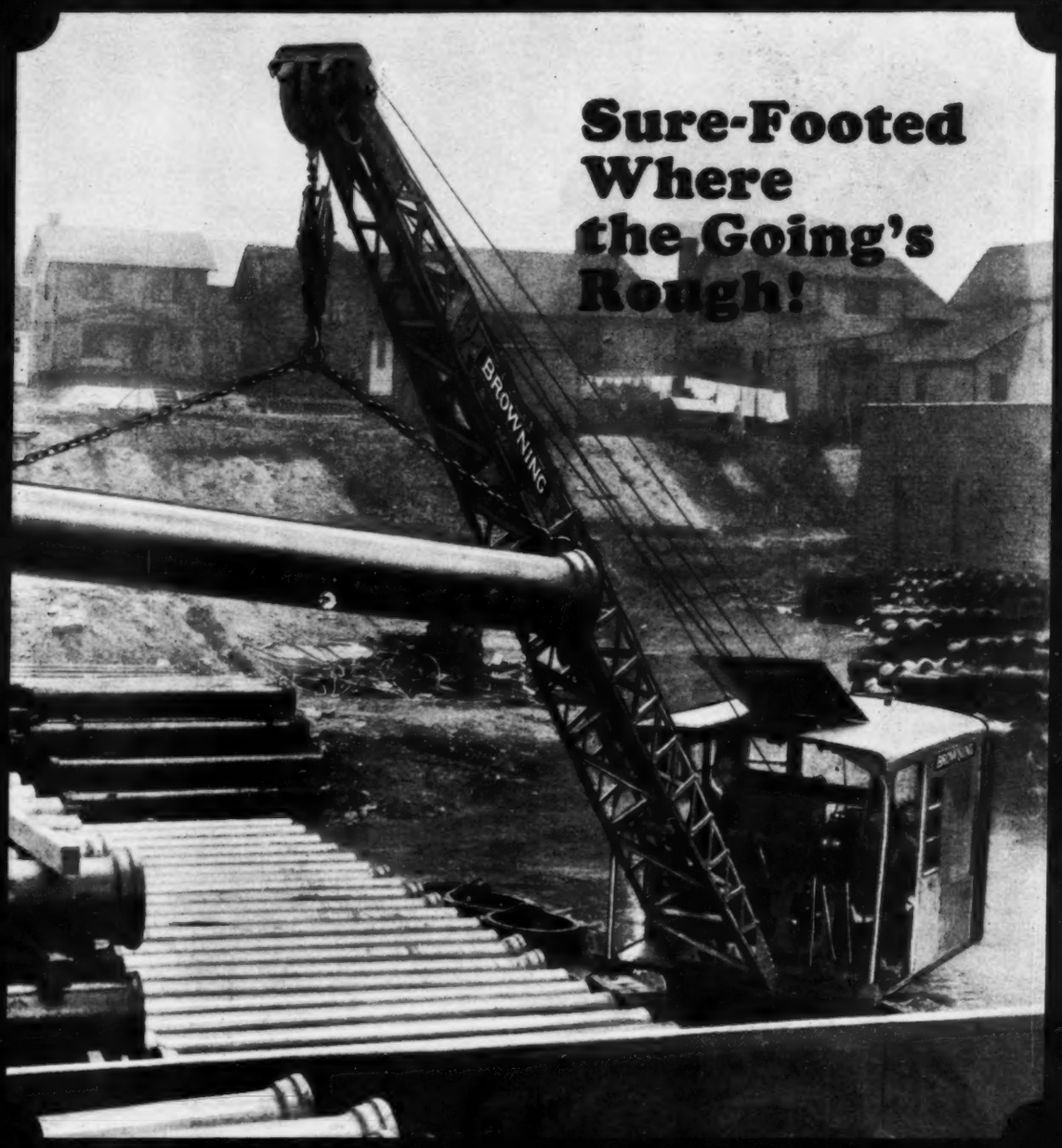

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NO MATTER how rough the going, you can get a Browning Crawler Crane on the job. They'll go anywhere—and how they do work when they get there.

Sturdy, economical, easy to handle and speedy workers—they are real profit makers on all kinds of material handling work.

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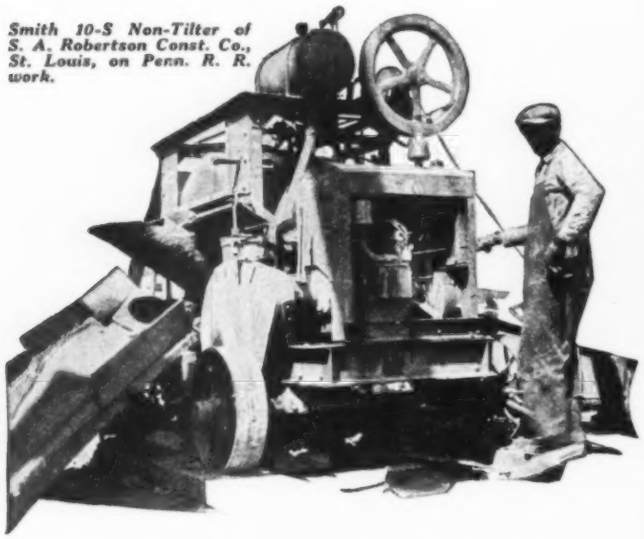
"See The Browning Cranes at the 1928 Convention and Road Show, American Road Builders Ass'n, January 9th-13th inclusive, at Cleveland, Ohio."

For Uniform Concrete—



Smith 10-S Non-Tilter of S. A. Robertson Const. Co., St. Louis, on Penn. R. R. work.

a Smith Mixer in Any Size

Getting a consistent strength and "workability" in every batch on a job is made considerably easier with a Smith. If the aggregates are measured with reasonable accuracy, the Smith Water Measuring Tank and smooth end-to-center Mixing Action will take care of the rest.

These features and ruggedness were developed to perfection years ago in Smiths and, in any size from 2½-S up to 112-S, these mixers give *better* concrete and have a longer life.

Catalog No. 526 is not only a presentation of 17 models of quality mixers but is also a manual on the subject of Concrete. We'd like to send it to you—why not dictate a note for it now?

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Two Smith 56-S Tilters mixing the new Catawba Dam of the Southern Power Co.

SMITH MIXERS

Name those things which you want your paver to give you. Check the New Rex 27-E against them. On this buying basis you will buy the Rex—"The Finest, Fastest Paver ever Built." Ask for a catalogue on it.

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(Reg. U. S. Pat. Off.)

Send for the Bridgeman's Standby

Rugged, sturdy gloves that wear like iron. Grey buffed cowhide hand and back of fingers to knuckle, rest is of canton flannel, gun cut, all seams protected. Six inch canvas cuff—hold tight back.—WON'T DROP OFF.

Send $1.50, draft, check, or money order for one pair.

Sabin Co., *Gloves*
536-540 W. Federal St., Youngstown, O.

"Golly man, dem Plymouths sho am brutes fo' work."
"Big boy, dey ain't nothin' else but."

Yes, Sir! Linden, Alabama. Mr. Taylor had Director Clump of the famous Midnight Pictures Corporation, Inc., come over from Birmingham to shoot these pictures of Plymouths doing their stuff. Florian Slappey came along and suggested that Lawyer Evans Chew put his notary seal on Mr. Taylor's letter but Lawyer Chew said, "Not necessa'y, Mistuh Taylor's letter and signature am good anyway."

WAY DOWN IN OLD ALABAM'

Plymouths travel—they travel from our factory to all parts of this country, Canada, South America, Philippines and foreign countries where they are put on tracks and under their own power travel more and pull with them the products, the refuse, the excavation, the building materials of the world's work and industry—and reap a profit for their owners by their performance and economy.

This illustration takes you with two 8-ton Plymouths to sunny Alabama where Mr. R. H. Taylor, General Road Contractor, is working two trains, pulling 60 tons each over a mile track having 2 per cent grades and 150 ft. radius curves. His net tonnage hauled per day of eleven hours is 700 tons per train.

The average gasoline consumption per day is only 15 gallons. He says, "Plymouths are the best gasoline locomotives on the market today." We believe that we can convince you also.

R. H. TAYLOR
GENERAL ROAD CONTRACTOR

Linden, Ala., Apr. 12, 1927

The Fate-Root-Heath Co.
Plymouth, Ohio
Gentlemen:

Just a word regarding my Plymouth Gasoline Locomotives.

I am now using from six to eight four yard cars to the locomotive on a haul of about one and a quarter miles, and can say that they are giving me perfect satisfaction in every particular. I am well pleased with their operation, and would not hesitate to recommend them to any one, as being the best gasoline locomotive on the market today.

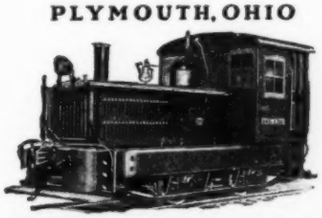
Thanking you for all your kindness to me. I beg to remain,

Yours very truly,

R. H. Taylor

Write for descriptive literature and illustrations showing the wide adaptability of Plymouths to Haulage Problems.

PLYMOUTH LOCOMOTIVE WORKS
The Fate-Root-Heath Company
PLYMOUTH, OHIO



The PLYMOUTH 25-ton Gasoline Locomotive is built especially for heavy hauling and shifting.

If it's a Track Haulage Problem There's a PLYMOUTH to Solve it

PLYMOUTH
Gasoline Locomotives

—and in the country estate of Senator James Couzens—

—*Rapid Drainage Pipe* is used for draining the main entrance driveway. This roadway is approximately 3,000 ft. long and consists of gravel construction without curbs or gutters of any sort!

J. French Paddock, civil and landscape engineer, who designed and supervised the work on this estate, writes that "For this type of construction it is necessary to have an excellent underground drainage system." And his choice was "Rapid Drainage Pipe!"

The many reasons why this pipe is chosen by engineers and contractors everywhere for draining roadbeds, golf courses and cellars, is explained in our illustrated booklet. Where shall we send your copy?

Rapid Drainage Pipe

WALKER CEMENT PRODUCTS, Inc.

LITTLE FERRY, N. J. HEMPSTEAD, R.F.D. 3. BALDWIN, L. I., N. Y.

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Driving 20" Octagons

Here we have a size 0 Union Hammer driving 20 inch octagon precast concrete piles.

The Union gets them down fast and true, with minimum steam consumption—and without damage to the heads. The exclusive Union Patent Cushion Base protects both the pile heads and the working parts of the hammer, and holds the piles in perfect alignment.

Union Hammers drive or pull with equal facility—work equally well on sheeting, concrete or steel piling—and are built in sizes to suit every requirement. There are nine sizes in the Union family.

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Moved and Operated by a Single Power Plant

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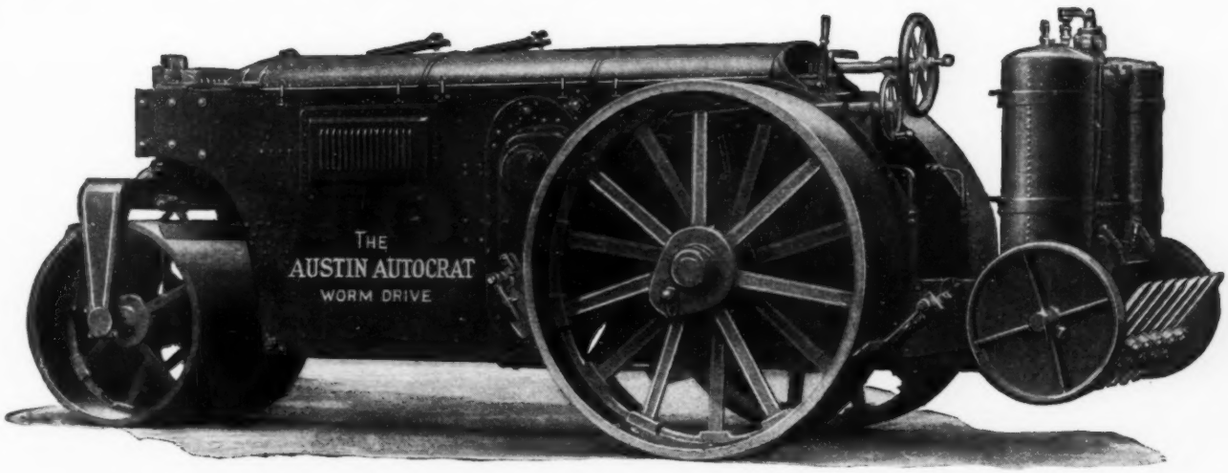
A single shift of the clutch and the entire plant is at the job—on the job.

Write for details. Service warehouses in all principal cities.

Acme Road Machinery Company

Frankfort, N. Y.

The New AUSTIN AUTOCRAT

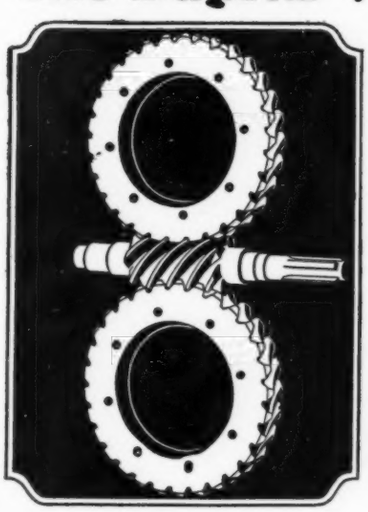


STREAM-LINE—WORM DRIVE

IMMEDIATELY noticeable is the pleasing stream-line design affording the operator unobstructed view of the work of both front and rear rolls. The deep frame side plates, same height front to rear, enclosing power unit and transmission completely, affording a protection from dust, dirt and the elements, as well as against petty thievery of such things as carburetor and magneto.

The outstanding feature of the AUTOCRAT, and the one that places it far in advance of all present motor rollers, is—

The Duplex Worm Gear Drive—



through which the power of the heavy-duty 4-cylinder motor is transmitted to the clutches, thence to the rear axle. New in its application to a road roller, but in almost universal use in the better grade motor trucks. Seven points of superiority:

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Complete information on this new roller is prepared for mailing. Drop us a line and let us tell you of the amazing possibilities of this great 10-ton roller.

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America's first *3-wheeled motor roller.*

1911
America's first *tandem motor roller.*

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America's first *Pup size roller, and now in*

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America's first *worm drive motor roller.*

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Send me the full information on the Austin Autocrat.

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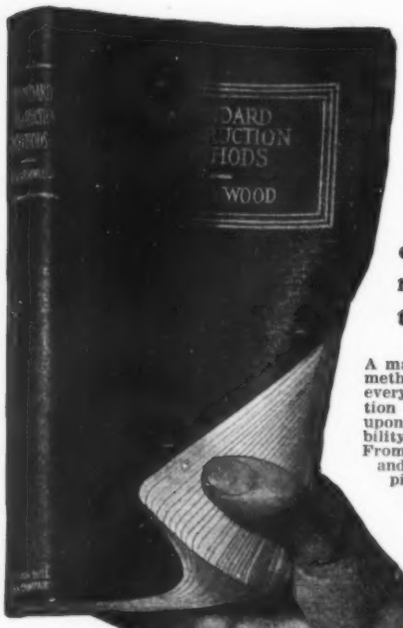

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A practical working book for the man who must get things done right and done quickly in modern construction work.

A manual of actual construction methods; methods that are *used* every day by practical construction superintendents and others upon whom rests the responsibility of getting things done. From first steps in organizing and preparing equipment, to pipework and painting; from pile driving to scaffolding, this new book covers everything in satisfying detail.

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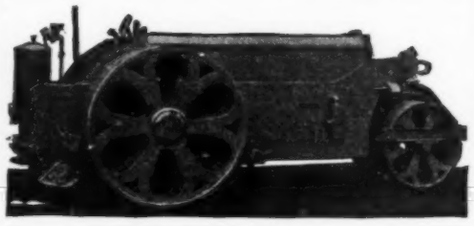

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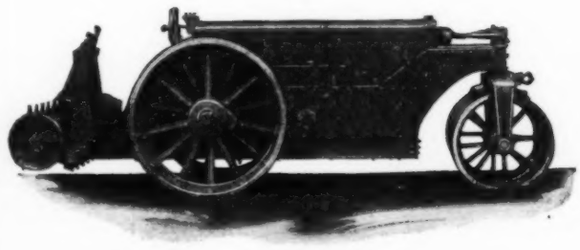
BUFFALO-SPRINGFIELD ROLLERS

Steam and Motor Propelled

Built in all standard types and sizes



Standard 4-Cylinder Motor, 3-Wheel Roller equipped with Scarifier

Inquiries invited.

The Buffalo Springfield Roller Co.
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REPUBLIC
It is significant to note that the acquisition of Linn by Republic makes the Republic line of motorized transportation more complete than ever for serving the haulage requirements of industrial America.
Advance copy of Saturday Evening Post Announcement!
Note the Linn exclusive patented flexible traction-unit

GREATEST ADVANCE in heavy hauling history now internationally available ›››

LINN TRACTOR ***now a division of Republic Motor Truck Co., Inc.***

THE Republic Motor Truck Co., Inc., now announces its purchase of the entire capital stock of the Linn Manufacturing Corporation, of Morris, N.Y. Through this important transaction, Republic completes its famous line of motor trucks with a machine that is literally revolutionizing heavy hauling, snow removal, road building, construction work, lumbering, oil and mining operations.

A master of service that offers both the pulling power of the tractor and the load-carrying advantages, ease of operation, and safety of the heavy truck. And much more.

The Linn Tractor! A time-proved success that has been performing astounding duty in New York State and Canada for eleven years. A machine with basic patented features that make it totally unlike anything the world has ever seen.

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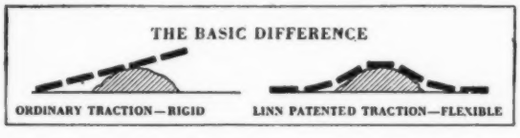

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Let us send you performance pictures and complete information about the Linn. Let us explain how its savings match its service and magical operation. Write.

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105 direct distributors located throughout the United States and 49 distributors located in 30 foreign countries.

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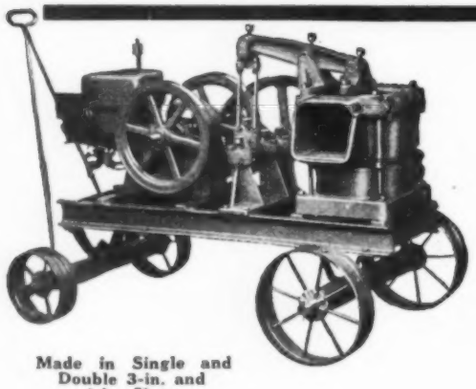

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Time means Money

to the contractor, and time lost cuts down on the profits. A Humphryes High Capacity Diaphragm Pump is the most inexpensive drainage insurance you can buy.

Write us for details. Bulletins 264S and 283S have valuable information

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Of Construction Methods, published monthly at New York, N. Y., for Oct. 1, 1927.

State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared C. H. Thompson, who, having been duly sworn according to law, deposes and says that he is the Secretary of McGraw-Hill Publishing Company, Inc., publishers of Construction Methods, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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Sworn to and subscribed before me this 30th day of September, 1927.

[Seal.] MARTIN J. WIEMER.

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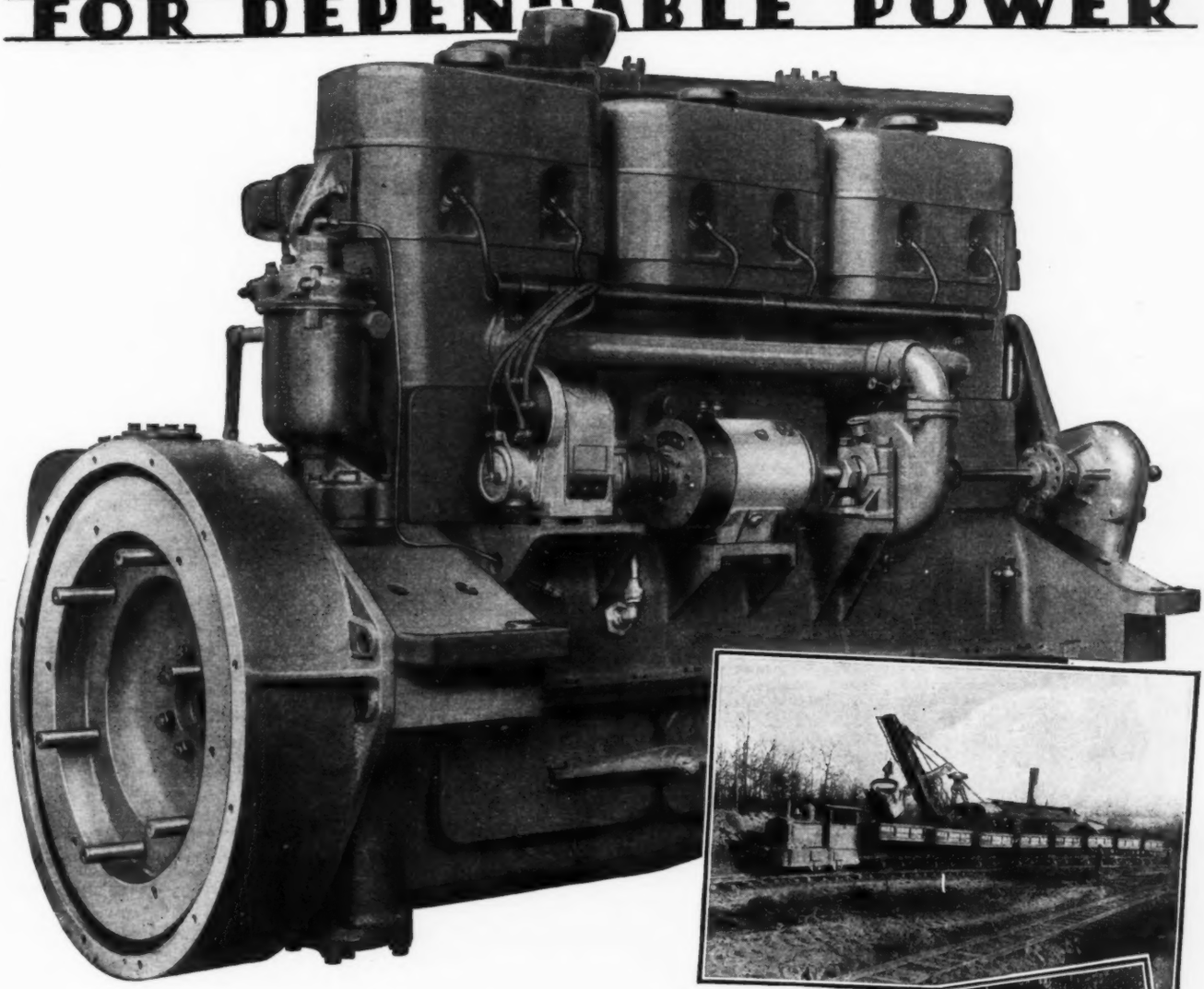

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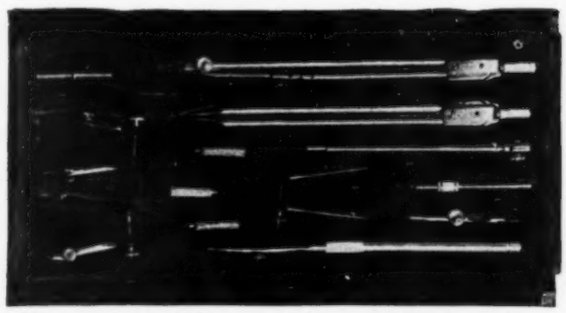

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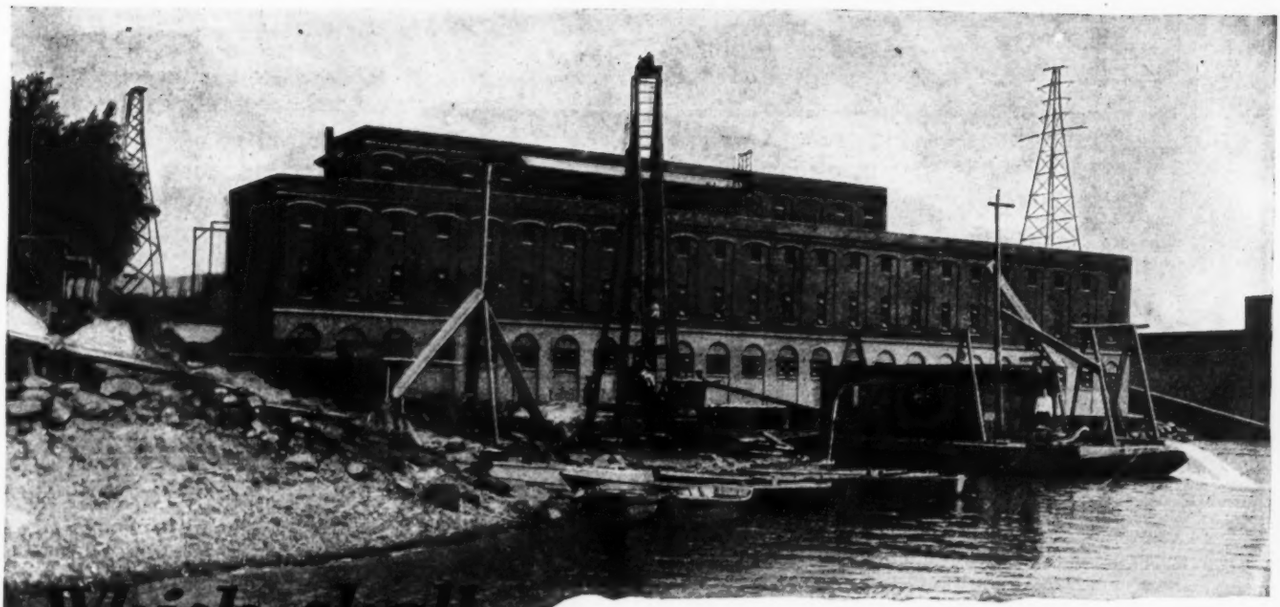

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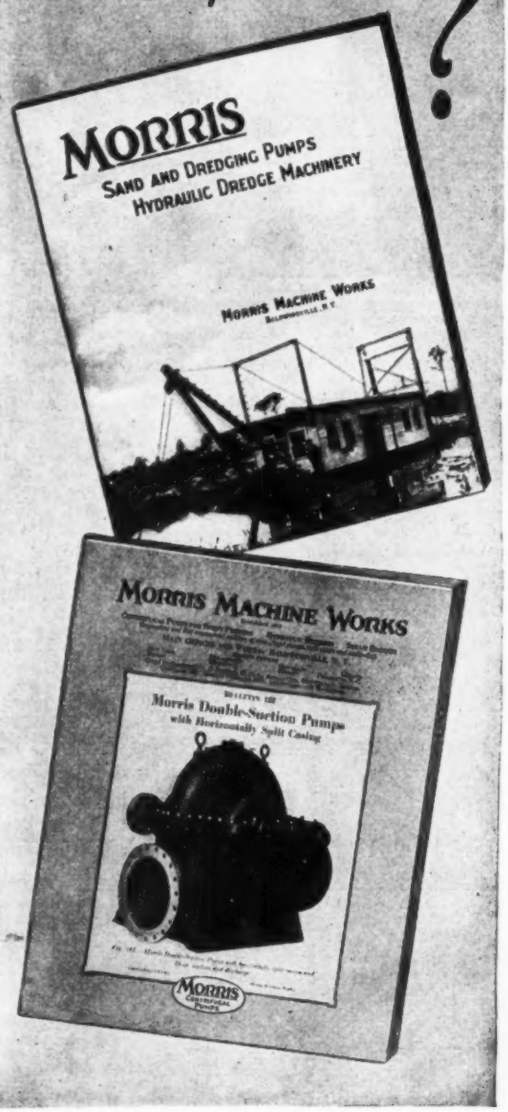

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INDEX TO ADVERTISERS

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	Page
A	
Acme Road Mchry. Co	78
Austin-Western Rd. Mchy. Co.	79
B	
Barber-Greene Co.	72
Browning Crane Co.	75
Buckeye Traction Ditcher Co.	73
Bucyrus Company	42
Buffalo Springfield Roller Co.	80
Buhl Company	68
Byers Machine Co.	63
C	
Carbic Manufacturing Co.	61
Carter Co., Ralph B.	87
Caterpillar Tractor Co.	54
Chain Belt Co.	76
Cleveland Rock Drill Co.	60
Clyde Iron Works Sales Co.	52
Construction Machinery Co.	87
D	
Dayton-Whirley Co.	82
Dobbie Foundry & Mch. Co.	70
E	
Easton Car & Constr. Co.	64
Eisemann Magneto Corp.	56
Erie Steam Shovel Co.	43
Ersted Machinery Mfg. Co.	70
F	
Fate-Root-Heath Co.	77
Foote Company	50
Foundation Co.	88
G	
General Excavator Co.	55
Good Roads Machinery Co.	65
H	
Haiss Mfg. Co., Geo.	57
Harnischfeger Corp.	72
Heltzel Steel Form & Iron Co.	46
Hercules Motors Corp.	3rd Cover
Hercules Powder Co.	69
Huber Mfg. Co.	80
Humphreys Mfg. Co.	82
I	
Independent Conc. Pipe Co.	66
Ingersoll-Rand Co.	49
Insley Mfg. Co.	44
J	
Jaeger Machine Co.	62
K	
Koehring Company	67
Kolesch & Company	84
L	
Lakewood Engineering Co.	59
Lawrence Cement Co.	4th Cover
LeRoi Company	83
Leschen & Sons Co., A.	45
Lidgerwood Mfg. Co.	66
Link-Belt Co.	58
Linn Manufacturing Corp.	81
Littleford Bros.	64
Lowell Wrench Co.	62
M	
McGraw-Hill Book Co.	80
Makepeace, Inc., B. L.	84
Marion Steam Shovel Co.	51
Metal Forms Corpn.	74
Milwaukee Locomotive Mfg. Co.	48
Morris Machine Works	85
N	
National Brake & Elec. Co.	48
Northwest Engineering Co.	47
Novo Engine Co.	84
O	
Owen Bucket Co.	71
P	
Parker, A. A.	84
Plymouth Locomotive Wks.	77
R	
Ransome Concrete Mchry. Co.	18, 19
Republic Motor Truck Co.	81
Rogers Brothers Corp.	74
S	
Sabine Co.	76
Sauerman Bros.	68
Schramm, Inc.	68
Smith Co., T. L.	76
Standard Scale & Supply Co.	72
Sullivan Machinery Co.	70
T	
Texas Company	2nd Cover
Thew Shovel Co.	41
U	
Union Iron Works	78
Universal Crane Co.	53
Universal Crusher Co.	74
Universal Portland Cement Co.	3
W	
Walker Cement Products	78
Watson-Stillman Co.	60

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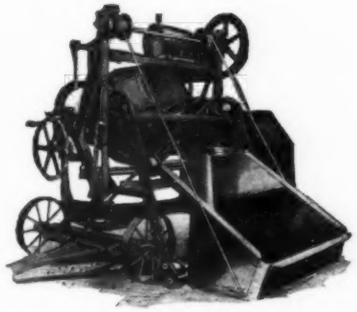

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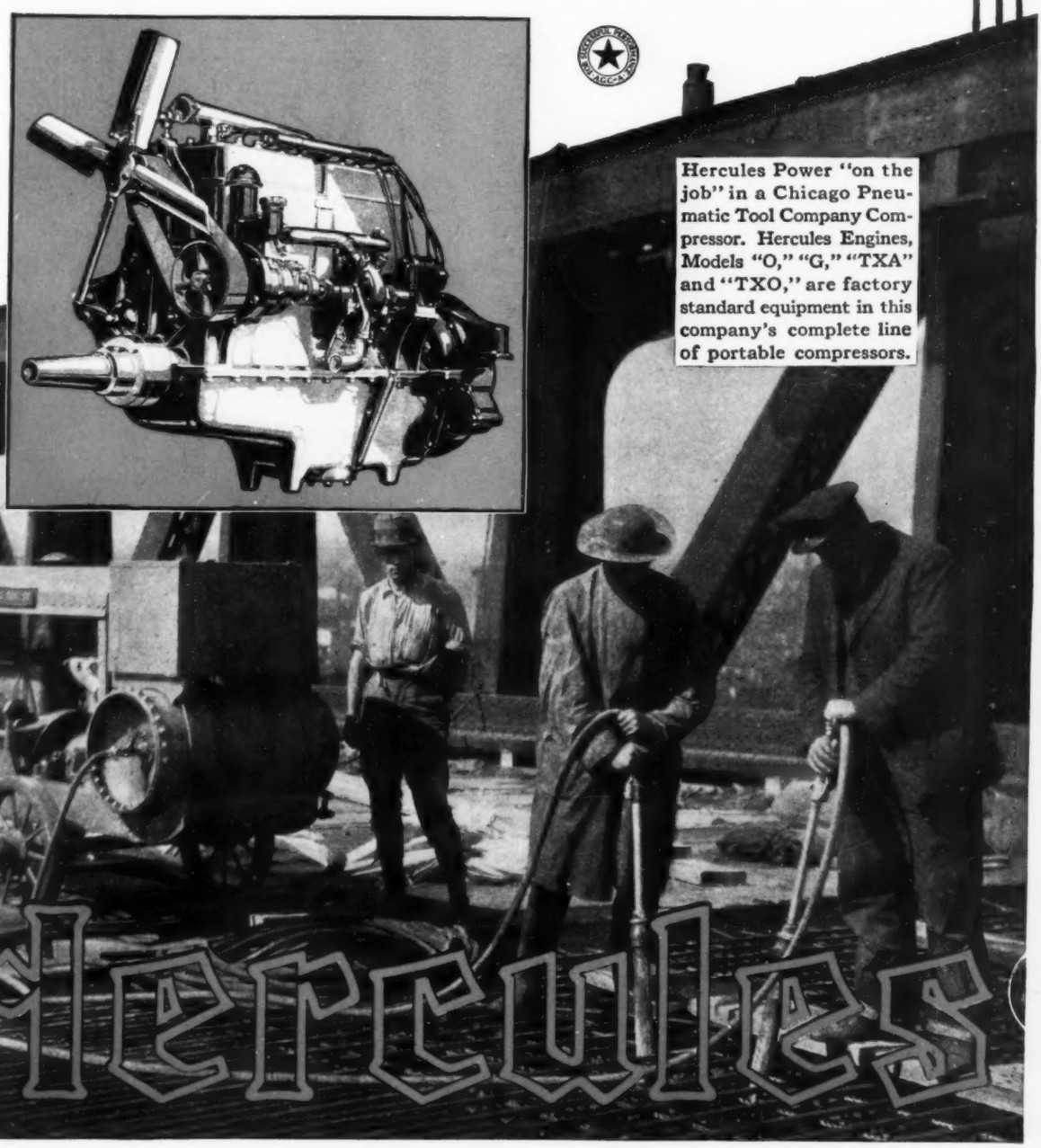

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